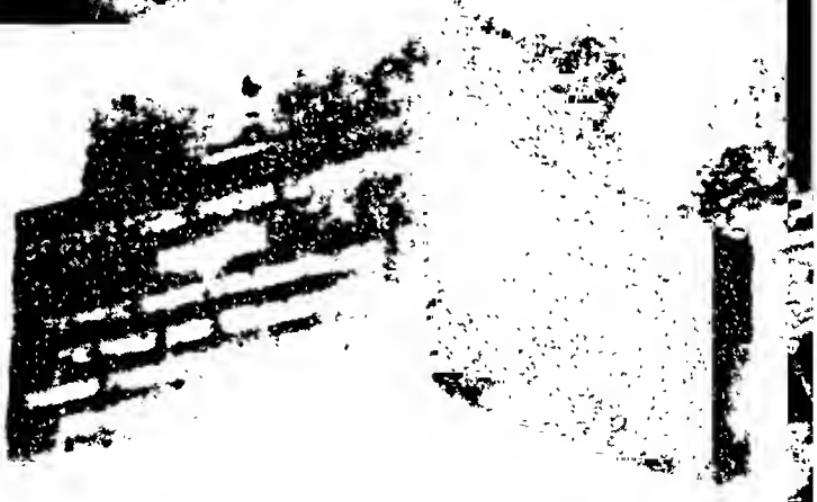


*CLASSICAL CONTRIBUTIONS
TO
OBSTETRICS AND GYNECOLOGY*



SIR JAMES YOUNG SIMPSON (1811-1870)
From a bust in St. Andrew Chapel, Westminster Abbey.

CLASSICAL CONTRIBUTIONS
TO
OBSTETRICS AND GYNECOLOGY

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*This book is dedicated to the
enduring memory of
J. WHITRIDGE WILLIAMS*

"From the life of men whose passage is marked by a trace of durable light, let us piously gather up every word, every incident likely to make known the incentives of their great soul, for the education of posterity."—PASTEUR

Foreword

TODAY, more than ever before, do we need the refining influence of the culture of medical history to rescue our profession from the universal gravitational tendency of a gross materialism wedded to the worship of the golden calf. He who makes his first essay into the fertile fields even of recent medicine, realizes at once its cultural value as he expands his horizon and enjoys the thrills of adding lustre to some antecedent worker; while the deeper one dips into history, the richer grow the rewards. Obstetrics and Gynecology challenge us particularly by reason of their dramatic nature, for how dramatic were the lives of those old doctors of the eighteenth century on the continent and in England! How notable the rills from which sprang our gynecology: one in the Kentucky woods and the one down amidst the southern plantations. Where is the branch of our art which can boast of worthier ancestors than those phenomenal sires, Ephraim McDowell and Marion Sims?

I am glad, standing at the threshold, to hail so admirable and novel a plan as this work of Herbert Thoms, one so comprehensive and so calculated to beguile successive generations of students into happy associations with so many notables, the end for which our great medical libraries have sprung into being, served and fostered by successive generations of doctors.

With what pleasure do I still recall my associations in the eighties with the vast storehouse of the College of Physicians in Philadelphia, the pabulum of such leaders of medicine as S. Weir Mitchell, S. W. Gross, Horatio Wood, and George B. Wood of U. S. Dispensatory fame, and the recourse of all with literary aspirations. How that old medical library has added to the fame of the city and its medical schools! Robert P. Harris, my older congenor and foster parent, and perhaps

our greatest medical statistician, lived so largely in the library that his cantankerous contemporary Lawson Tait thought to deliver a finishing swordthrust by dubbing him a mere library surgeon. My own early warm friendship with William Osler began, I am sure, when he came up to Kensington among the mill population and saw my considerable library of medical classics. More than likely it was the shelf of old vellums, the editions of Vesalius, and the Latin *Editio Princeps* of Hippocrates, and the *Editio Princeps* of Galen that labelled and brought me to Baltimore, where I soon came to know Billings, too, who, accepting the gift of a rarity for his Surgeon General's Library completed my set of its early catalogue volumes. Billings was followed by Fletcher, another foster parent of the history-minded, and then came the formation of our Medical Historical Society by William Welch here, our notable historian. The incubation period past, the Welch Library sprang into being, armed cap à pie, like Minerva from Jove's brain, with our own Fielding H. Garrison and H. E. Sigerist in charge. William Halsted, too, was no mean book-collector, on the several subjects which interested him, while Harvey Cushing soon became a veteran collector, our greatest authority on Vesalius, and a charming exponent of medical lore in whatever field attracted him.

It is my fond expectation that the work before us will do much to enhance the value of medical history as a background, and impress our students with the dignity of present-day professional acquirements which have so often called for sacrifices even of life itself.

HOWARD A. KELLY

Preface

THERE IS an authenticated story of a Danish church where, well on into the nineteenth century, worshippers maintained the custom of bowing when they passed a certain spot upon the wall. The reason which no one knew, was discovered when removal of the whitewash revealed the likeness of a Madonna. Folk had bowed for three centuries before the place where the Madonna used to be. It is one of the fine traditions of Medicine that physicians have always revered those who by their lives and achievements have added to the science of healing. Perhaps by such historical excursions as here presented, we may bring to view in a somewhat clearer perspective some of these medical ancestors and, if this should happily occur, the effort of the author will have been one of usefulness as well as one of utmost pleasure.

The purpose of these readings is not to give a list of masterpieces, like a five foot shelf of books, duly labelled and wrapped up, in order that he who runs may read. If this was the objective the question as to the choice of material would demand the utmost in intelligent and careful selection: The author, however, has exercised the right of personal choice in the hope that the reader will be stimulated to seek for himself those fields wherein he may make his own choice, draw his own comparisons, and thereby worship his own particular medical gods.

After surveying the very excellent readings in other fields of medicine by Long, Fulton and Major, it required no little temerity on the part of the author to undertake to do something similar in Obstetrics and Gynecology. It must be apparent to the reader that the first essential in such a task is the establishment of a definite policy concerning the scope of the undertaking. In general therefore it was decided in the present work to deal as much as possible with clinical ob-

stetrics and gynecology, and, because of this, to use somewhat fuller transcriptions. It was also decided not to represent living authors nor to use material written after 1900. This latter decision was made on the reflection that these belong to contemporary medical literature and are therefore readily available to all who are interested.

The author is quite in agreement with most authorities who believe that to affix proper names to clinical entities is to be condemned, nevertheless in obstetrics and gynecology as in other fields of medicine many such combinations have occurred. Hegar's sign, Braxton Hicks' contraction, Credé prophylaxis, the Scanzoni maneuver, the Tarnier forceps, etc., are examples the like of which occur with relative frequency. There may be something of value in this practice, however, for it may be impressed on the student that the men who bore such names are historically important and therefore deserve a more familiar acquaintance. It will be found that many such associated names are here represented but such selection was made only in those instances where the authority concerned was an important contributor to the development of medical science.

It has been found convenient to group the material according to chapters representing general subjects, e.g., puerperal infection, pathology of pregnancy, etc., and in each group to arrange the material in chronological order. Whenever an English translation of a selection was available, this has been given the preference. When such translations were not available, the translating has been done by those whom I regarded as expert in that work. The final form however and especially the technical phraseology is the sole responsibility of the author. In the translation from the Greek of Soranus, I am particularly indebted to Professor Kenneth Scott of Western Reserve University. Finally I acknowledge with sincere gratitude the many helpful suggestions of my colleagues Dr. John F. Fulton and Dr. Samuel C. Harvey, the painstaking and efficient work of my secretary Mrs. May Young, and the fine co-operation of Miss Marjorie Wildes

PREFACE

and her associates in the Library of the Sterling Hall of
Medicine.

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* * * *

It is a distinct pleasure to acknowledge my sincere thanks
to Mr. Charles C Thomas, the publisher of the present vol-
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thusiastic cooperation in the preparation of the work has
been one of the greater joys associated with the endeavor.

HERBERT THOMS

Yale University
New Haven
May 1, 1935.

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CHAPTERS ONE AND TWO

FOREWORD

OBSTETRICS had its beginnings in the origins of the human race, and just when it began to be considered as an art and practiced as such we have no means of knowing. At the time of Hippocrates the art of the midwife was well recognised. In his writings (400 B.C.) we find numerous references to obstetrics and his description of a case of puerperal infection will be found under Chapter Five. Although Galen (first century) whose medical writings, based on those of Hippocrates, were to influence medicine for a thousand years to come, they added but little to obstetrical knowledge. The most distinguished obstetrical writer of antiquity is Soranus of Ephesus (second century). His book of instruction for midwives appears to be the first work on this subject and his pupils Rufus and Moschion carried on his principles. Little more was added however until Aetius (501-575) collected all that had been previously written on the subject and added to this his own valuable observations. Aetius' knowledge is well seen through the pen of Paul of Aegina who followed him (625-690). Following Paul comes a period of darkness in which a not too bright light of obstetrical knowledge is carried by the Arabians, particularly by Avicenna and Albucasis.

With the advent of printing and the foundation of Universities especially in Germany, printed works began to appear. The first of these was in 1513 by Rösslin entitled *A Garden of Roses for Pregnant Women and Midwives*. Translations of this crude but important work went through many languages and its appearance marks what might be termed the beginning of the Obstetric Renaissance. It was Ambroise Paré (1510-1590) who embraced the highest point of genius in this development. His reintroduction of podalic version as a substitute for craniotomy marks one of the great historic landmarks in Obstetrics. In but a comparatively short time following Paré the forceps were discovered and William Harvey (1578-1657) appeared as the first English author on Obstetrics. In Germany, Justine Siegemundin; in Holland,

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Deventer (1651-1724); and in France, Mauriceau (1637-1709) are the next important obstetrical writers.

Fielding Ould (1710-1789), a Dublin obstetrician, described the fundamentals of the mechanism of labor and thus began another important chapter to modern obstetrical science. His work was further elaborated by William Smellie. The remaining authors in Chapters One and Two are also of no little historical importance. As the fundamentals of Obstetrics, the Science, became to be known and established, the great contributions are more circumscribed, more concrete, of which such contributions as those of Stearns and Simpson are excellent examples.

CHAPTER I
GENERAL OBSTETRICS

Soranus of Ephesus (2nd Century A.D.)

SORANUS OF Ephesus, according to Suidas, studied in Alexandria and practised in Rome under Trajan and Hadrian. He was contemporaneous with the surgeon Archigenes but died before Galen wrote his work *De Methodo Medendi* (A.D. 178). According to Ermerins his works consist of fourteen treatises. A careful study of the work of Soranus shows him to have been particularly interested in gynecology and to have thoroughly understood his subject. He was not merely a compiler as was the case with so many ancient writers but an able and original thinker. His writings in obstetrics show that that art attained a considerable perfection in his age and his chapters on dystocia are among the most remarkable that have come down to us.

His work on Gynecology is divided into chapters and deals with such subjects as anatomy, menstruation, fertility, signs of pregnancy, prenatal treatment, natural labor, the obstetric chair, care of the newborn, retention of the menses, dysmenorrhea, uterine hemorrhage, and the use of the vaginal speculum.

The following description of the uterus is taken from his famous chapter on anatomy and shows the careful arrangement which is characteristic of this author. The influence of Soranus on his successors was immeasurable, especially through the translations into Latin of the 4th and 6th centuries A.D. The last edition of Soranus' "gynecology" is that of Ilberg (1927) in the *Corpus Medicorum Graecorum* and it is from this text that the following translation has been made, and for which I am particularly indebted to Professor Kenneth Scott of Western Reserve University.

A DESCRIPTION OF THE UTERUS

7. The uterus is situated in the open space of the hip joints (within the peritoneum) between the bladder and intestinum rectum, resting on the latter and beneath the bladder, sometimes wholly and sometimes partly, because of changing its position according to its size. In the case of chil-

dren the womb is smaller than the bladder (wherefore it likewise is entirely under the bladder); but in the case of full grown maidens it is equal to the bladder in regard to the parts lying above and in women of more advanced age and those who have already been deflowered and especially those who have borne child it is larger, so that it most often rests at the end of the colon and particularly in pregnancy (as it is possible to comprehend by observation) because the peritonaeum and epigastrium are greatly swollen from the fact that what is produced is so large with the membrane and waters with it. After parturition it contracts, but in such a way as to have a greater size than before parturition. At that time indeed it is larger than the bladder, but it is not wholly beneath it, for in front the neck of the bladder is more prominent (as it has at its end the urethra and stretches along the whole vagina) but previously it separates itself from the uterus. Behind, above the fundus of the bladder, is the fundus of the uterus lying beneath the navel so that the cavity of the bladder lies on the neck of the uterus, and the fundus on the body of the same.

8. The uterus is attached by slender membranes above to the bladder and below to the intestinum rectum on the sides and in back to the parts springing from the ilia and sacrum. When these are shortened on account of inflammation of the uterus is drawn upwards or is made to incline sideways; but when these are relaxed and slackened, the uterus falls forward, not because it is animal like, as some believe, but because, nearly resembling others parts, it has sensitiveness and on this account is contracted by astringents and relaxed by emollients.

9. The form of the uterus is not convoluted as in dumb beasts, but somewhat similar to a doctor's cupping glass. For beginning round and broad at the end the fundus gradually contracts to a narrow opening at the mouth. The first and preceding part of the uterus is called the ostium or 'mouth,' the part after this the collum or 'neck,' the following part the cervix or 'neck,' all these together the caulis, 'stalk' or 'shaft.'

The first parts of the uterus which widen out on both sides after the narrowest part of the neck are called humeri or 'shoulders,' the parts after these the latera or 'sides,' and the last part is called the fundus or 'base.' What lies beneath is called 'base,' and the whole space is called cavity or 'hollow' and venter or 'belly' and sinus or 'lap.'

10. The mouth, *os uteri*, lies in the middle of the pudenda muliebria, for the neck closed in by the labia. And from these the mouth is further removed in some women and less in others, according to their age (as in general for those who are already mature, $3\frac{1}{2}$ or 4") and it becomes more accessible following childbirth because the neck is lengthened. The size is likewise varying, but in most cases in conformity with nature the *os* is as large as the outer end of the orifice of the ear. The *os* opens at certain times as in the orgasm of sexual intercourse in order to receive the seed and in the menses for the excretion of the blood and in pregnancy in relation to the growth of the embryo. And at the time of birth it becomes even more dilated so far as even to admit the full size hand. By nature, however, it is delicate and fleshy in the case of virgins, like the sponginess of the lungs or the smoothness of the tongue, but in the case of those who have borne child it becomes more callous like the head of a polypus or, as Hierophilus says, like the end of a bronchus; it is made hard by the passing of excretions and by parturition.

11. The ovaries grow out from the side near the isthmus, one on each side. They are both soft and glandular, protected by their own membrane. In form they are not longish as in males, but somewhat flatnosed and spherical and a little flattened at the base. The spermatic vessel leads from the uterus through each ovary, and running along the sides of the uterus up to the bladder it enters into the neck of this. Thence it is thought that the feminine seed is not carried there by procreation because of its emptying externally, a matter which we have discussed in the section on the semen. Some, as Hierophilus too would have it, say that there are suspensory ligaments attached to the ovaries. We also have observed this with

our own eyes in the case of a certain woman suffering from intestinal hernia; during the operation upon her the ovary fell forward when the vessels which held it and embraced it were relaxed and with them the suspensory ligament also fell forward.

12. One must not suppose that the uterus is absolutely essential for life, for it not only falls forward but in the case of some women it is also cut out without bringing death to them, as Themison relates, and they say that in Gaul the sows become better nourished after the cutting out of their uteri.

However when the uterus is diseased it causes the stomach and membranes to suffer in sympathy. There is also a certain natural sympathy between the uterus and the breasts. At least when, at puberty, the uterus grows larger the breasts also swell at the same time; it brings the seed to perfection and the breasts prepare milk for the nourishment of the offspring. When the menses flow the milk is checked but when the milk is flowing the menses no longer appear; just as, also, in the case of older women when the uterus grows smaller the breasts also in some wise wither. When the embryo is diseased the size of the breasts is reduced. Accordingly, in the case of pregnant women, when we see their breasts becoming shrivelled and contracting, we announce beforehand that foetal death has occurred.



William Harvey 1578-1657

FOLLOWING his discovery of the circulation of the blood (1616) and his publication of *De motu cordis* (1628), William Harvey was engaged in practice in London, devoting much of his time to attendance upon the King and the retainers of his court. From the date of the surrender of Oxford (1646), however, he followed the fortunes of Charles no longer and sought the privacy and leisure of the country for the remainder of his days. This he found in the homes of his brothers, one at Roehampton and the other at Combe

in Surrey. In his sixty-ninth year he was visited at Christmas, 1650 by George Ent, who says "feeling like another Jason with the Golden Fleece" he carried off for publication Harvey's great work



WILLIAM HARVEY, M.D. (1578-1657)

From the portrait by C. Janssens at the Kent and Canterbury Hospital, first published in the Harveian Oration, 1921.

From H. R. Spencer: *History of British Midwifery*.

de Generatione Animalium, which appeared in published form early in 1651. In this work appears the first original work on midwifery published by an English author, i.e., the chapter on Labor (*de partu*). Here we have excellent evidence that the author had an extensive personal experience in Obstetrics. Some idea of the

esteem in which he was held in this branch of medicine may be seen in the writings of Percival Willughby (1596-1685). In the latter's *Observations in Midwifery* he quotes his friend William Harvey on numerous occasions and recommends his own work in the following words: "I know none but Dr. Harvey's directions and method, the which I wish all midwives to observe and follow and oft to read over and over again; and in so doing they will better observe, understand, and remember the sayings and doings of that most worthy, good, and learned Doctor whose memory ought to be had forever in great esteem with midwives and childbearing women." Spencer in his excellent *History of British Midwifery* says "England, though last of the great countries to produce a writer on obstetrics, was fortunate in having as a father Harvey, who introduced into that branch of medicine the wide view, the scientific spirit and the conservative practice which have been its characteristics and made a great and lasting impression upon his followers who were not confined to his own country."

The scientific portion of Harvey's work on midwifery is an exposition of his own observation and experiments concerning the anatomy and physiology of reproduction and a criticism of former opinions on that subject. In the portion devoted to practical obstetrics, he emphasizes the importance of watchful waiting and gentleness in ordinary cases and the value of podalic version in difficult cases.

In the introduction Harvey says "Nature herself is to be addressed; the paths she shows us are to be boldly trodden; for thus, and whilst we consult our proper senses, from inferior advancing to superior levels, shall we penetrate at length into the heart of her mystery."

THE CONSTITUTION OF THE UTERUS*

Various, then, is the constitution of the uterus, and not only in its diseased, but also in its natural state, that is, at the periods of fecundity and barrenness. In young girls, as I said, and in women past childbearing, it is without blood, and about the size of a bean. In the marriageable virgin it has the magnitude and form of a pear. In women who have borne children, and are still fruitful, it equals in bulk a small gourd

* Willis, R. *The Works of William Harvey*. London 1847.

or a goose's egg; at the same time, together with the breasts, it swells and softens, becomes more fleshy, and its heat is increased; whilst, to use Virgil's expression with reference to the fields:

*"Superat tener omnibus humor
Et genitalia semina poscunt."*

Wherefore women are most prone to conceive either just before or just subsequent to the menstrual flux, for at these periods there is a greater degree of heat and moisture, two conditions necessary to generation. In the same manner when other animals are in heat, the genital organs are moist and turgid.

Such is the state of the uterus as I have found it before birth. In pregnant women, as I have before stated, the uterus increases in proportion to the foetus, and attains a great size. Immediately after birth, I have seen it as large as a man's head, more than a thumb's breadth in thickness, and loaded with vessels of blood. It is, indeed, most wonderful, and, as Fabricius remarks, quite beyond human reason, how such a mass can diminish to so vast an extent in the space of fifteen or twenty days. It happens as follows: Immediately on the expulsion of the foetus and its membranes, the uterus gradually contracts, narrows its neck, and shrinks inwardly into itself; partly by a process of diaphoresis, partly by means of the lochia, its bulk insensibly lessens; and the neighbouring parts, bones, abdomen, and all the hypogastric region, at the same time diminish and recover their firmness. The lochial discharge at first resembles pure blood; it then becomes of a sanious character, like the washings of flesh, and is otherwise pale and serous. At this last stage, when no longer tinged with blood, the women call it "the coming of the milk," for the reason probably that at that time the breasts are loaded with milk, and the lochia sensibly diminish; as if the nutritive matter was then transferred to the breasts from the uterus.

In other animals the process is shorter and simpler; in them

the parts concerned recover their ordinary bulk and consistence in one or two days. In fact, some, as the hare and rabbit, admit the buck, and again become fecundated, an hour after kindling. In like manner, I have stated that the hen admits the cock immediately on laying. Women, as they alone have a menstrual, so have they alone a lochial discharge; added to which they are exposed to disorders and perils immediately after birth, either from the uterus, through feebleness, contracting too soon, or from the lochia becoming vitiated or suppressed. For it often happens, especially in delicate women, that foul and putrid lochia set up fevers and other violent symptoms. Because the uterus, torn and injured by the separation of the placenta, especially if any violence has been used, resembles a vast internal ulcer, and is cleansed and purified by the free discharge of the lochia. Therefore do we conclude as to the favorable or unfavorable state of the puerperal woman from the character of these excretions. For if any part of the placenta adhere to the uterus, the lochial discharges become fetid, green, and putrid; and sometimes the powers of the uterus are so reduced that gangrene is the result, and the woman is destroyed.

If clots of blood, or any other foreign matter, remain in the uterine cavity after delivery, the uterus does not retract nor close its orifice; but the cervix is found soft and open. This I ascertained in a woman, who, when laboring under a malignant fever, with great prostration of strength, miscarried of a foetus exhibiting no marks of decomposition, and who afterwards lay in an apparently dying stage, with a pulse scarcely to be counted, and cold sweats. Finding the uterine orifice soft and open, and the lochia very offensive, I suspected that something was undergoing decomposition within; whereupon I introduced the fingers and brought away a "mole" of the size of a goose's egg, of a hard, fleshy, and almost cartilaginous consistence, and pierced with holes, which discharged a thick and fetid matter. The woman was immediately freed from her symptoms, and in a short time recovered.

When the neck of the uterus contracts in a moderate degree

after birth, and certain pains, called by the midwives "after pains," ensue, in consequence of the difficulty with which the clots are expelled, the case is considered a favorable one, and is so in fact; for it indicates vigour on the part of the uterus, and that it is inclined readily to contract to its usual bulk; the result of which is that the lochia are duly expelled, and health restored to the woman.

But I have observed in some women the uterine orifice so closed immediately after parturition, that the blood has been retained in the uterus, and then, becoming putrid, has induced the most dangerous symptoms; and when art did not avail to promote its exit, the woman has presently died.



Hendrik van Deventer · 1651-1724

DEVENTER is called the father of modern midwifery because of the great importance of his work *New Light for Midwives* (1701). In this work we find the first thorough study of the anatomy of the pelvis, and its deformities and the effect of the latter in complicating labor. So valuable was Deventer's contribution that it remained authoritative for one hundred and fifty years until Das Enge Becken of Michaelis appeared. Deventer, who was a native of Holland, was at first a goldsmith but turned to medicine at seventeen and, after studying at Groningen, practised as an obstetrician along with his wife in his native city The Hague. His first publication in 1696 was a preliminary called *Dageraat (aurora) der Vroedurowen* and he followed this with a more complete second volume which came out simultaneously in Latin with the title *Operationes Chirurgicae Novem Lumen Exhibentes Obstetricantibus*. In 1716 an English translation appeared under the title *The Art of Midwifery Improved*. Not only is Deventer's work obstetrically important but he was also a pioneer in the delineation of the deformities of the spine. So little attention was paid to pelvic abnormalities up to Deventer's time that he felt inclined to apologize for his consideration of the subject. He writes "As for the necessity of the knowledge of these bones and



HENRICUS A DEVENTER. MED:DOCT

Courtesy of New York Academy of Medicine

HENDRIK VAN DEVENTER (1651-1724)

their form and figure, I should take no notice of them, had I a mind to follow the method of other writers; or I should but slightly touch upon them so that the midwives would reap but little advantage of it, but thinking the knowledge of these bones to be highly necessary to midwives I thought it necessary also to represent these figures."

A DESCRIPTION OF THE BONY PELVIS*
THE EXPLANATION OF THE FIGURE 4

aa The upper part of the Os Sacrum, the Vertebrae of the Loins being taken away.

bbbb The Wings of the Pelvis, by some called Ossa Ilia, be-



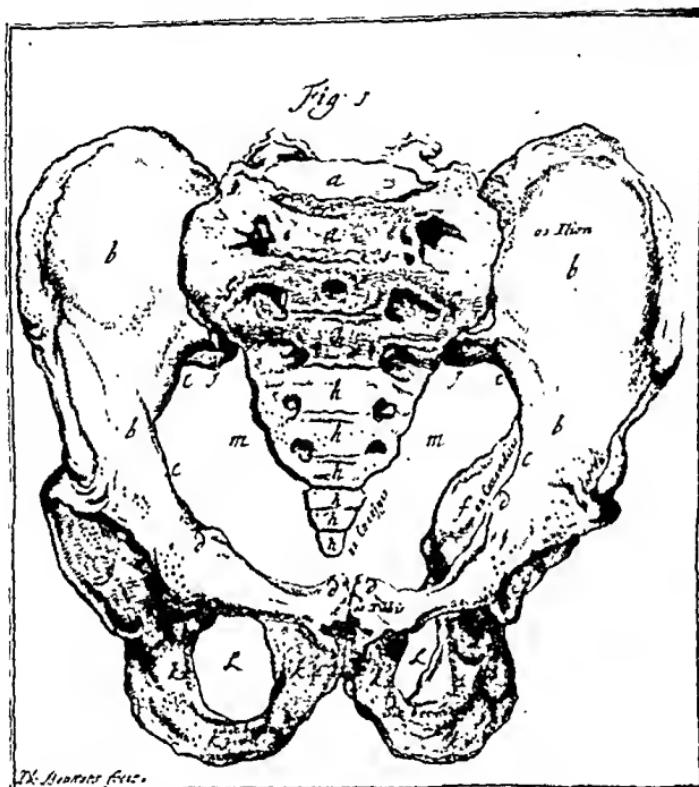
Courtesy of New York Academy of Medicine

TITLE PAGE FROM 1725 EDITION OF DEVENTER'S
Novum Lumen

cause the Guts called Ilia lie upon them; these properly do not make the cavity or Depth of the Pelvis, but are as it were the Bounds or Borders of the Pelvis, according to some

* Deventer, H. *Operationes chirurgicae novem lumen exhibentes obstetricantibus quo fideliciter manifestatur ars obstetricandi*. Lugd. Batav., 1701. English translation: *The Art of Midwifery*, London, Bettesworth, 1716.

Barber-Surgeons; nor do they encompass the Pelvis on every Side by their Extension, nor on the Fore-part, neither Behind, but are only annexed to it on each Side, yet they are chiefly extended towards the Back-part, more than the Fore-part; but near the Letters cccc which represent the Borders



Courtesy of New York Academy of Medicine

ILLUSTRATION OF PELVIS FROM DEVENTER 1725 EDITION

of the Pelvis, they serve to form the Cavity of it, and near the Letter f (where another of the Internal Lateral Bones is represented, which is nothing else but the Lateral Point descending to the Os Ilium) form the inward Part of the Pelvis.

cccc The hinder and upper far of the Margin of the Pelvis, next the Os Sacrum.

dddd The Bones called Ossa Pubis, whose Upper-part forms the Borders of the Cavity of the Pelvis on the Fore-side.

eee The bending of Os Sacrum hanging forwards, forming

the Hinder-part of the Margin or Borders of the Cavity of the Pelvis.

f The descending Point, or inward Side of the descending Portion of the Left Os Ilium, as above-mention'd.

gg The Cavities or Acetabula of the Hip-Bones, in which the Heads of the Thigh Bones are moved.

aaeeehhh The Vertebrae of the Os Sacrum appearing as such commonly making one Bone, with their Holes and their Connections.

hhh The Point of the Os Sacrum, called Os Coccygis consisting of three of the least of the Vertebrae, fastened together by Ligaments, as the Vertebrae of the Loins.

ii Two descending Portions of the Ossa Ilia.

k 1. The descending Part of the Os Pubis.

k 2. The descending Part of the Seat of the Hip-Bone.

k 3. The Place where the Os Pubis and the Seat or Hip-Bone grow together. N.B. The Points of the Os Pubis, I call Ossa Sedentaria or Seat Bones, because we sit upon them.

ll The Holes of the Ossa Pubis or Seat-Bones. For on both Sides, the Seat or Hip-Bone, and the Os Pubis joined together, form these Holes.

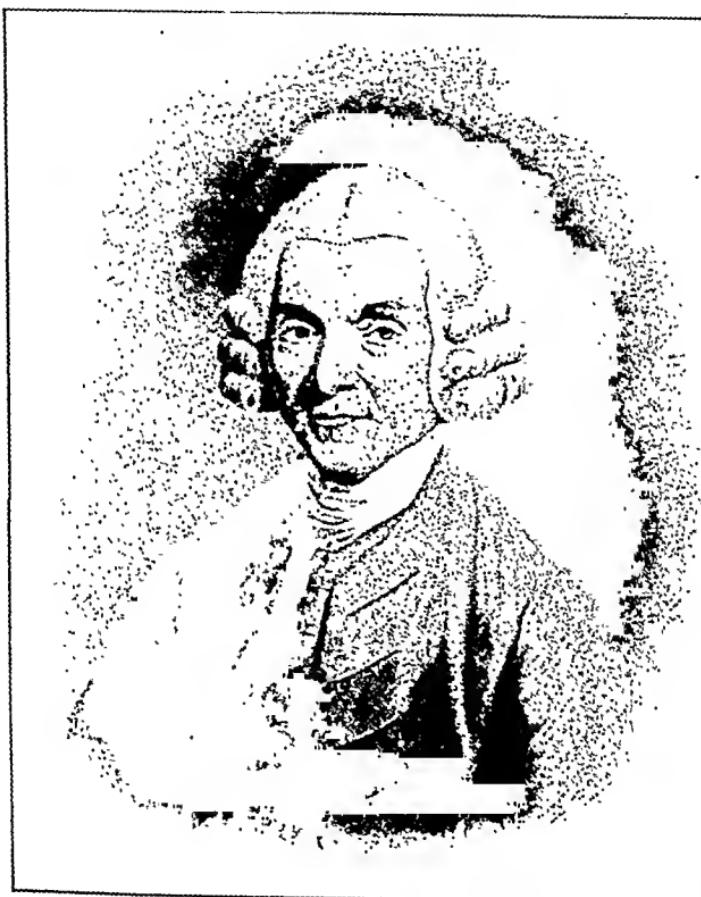
mm The Cavity of the Pelvis.



William Hunter . 1718-1783

ANATOMIST, Physiologist and Obstetrician, William Hunter was born May 23, 1718 in East Kilbride, Lanark. He was the elder brother of the Anatomist John Hunter. After spending five years at the University of Glasgow, he devoted three years to the study of medicine with William Cullen and from 1740-41 studied in Edinburgh. From here he went to London, where he lived with James Douglas, the anatomist and obstetrician. Before long Hunter became noted as a lecturer in anatomy and in 1747 he became a member of the Corporation of Surgeons. By degrees however he devoted more and more of his time to Obstetrics. In 1747 he was

appointed Surgeon-Accoucheur to the Middlesex Hospital and a year later Surgeon-Man Midwife to the British Lying-in Hospital. In 1750 the degree of M.D. was conferred upon him by the University of Glasgow. In 1762 Hunter was appointed Physician-extraordinary to the Queen. Five years later he was elected a fellow of the Royal Society. William Hunter died March 10, 1783.



WILLIAM HUNTER, M.D. (1718-1783)

From a print in the library of the Royal Society of Medicine.

From H. R. Spencer: *History of British Midwifery*.

Hunter is known today chiefly as a great anatomical teacher. To use his own words it was as a Teacher and "Breeder of Anatomists" that he was chiefly successful. His contributions to Obstetrics are principally anatomical, as is witnessed by his great work on the gravid uterus. This is not only a noteworthy monument to its author but much credit should also be given to the draughtsman Rymsdyk. In this work Hunter gives excellent dis-

sections showing the fetus in utero, the musculature of the uterus, and the relationships of the decidua. Hunter was the first to give an accurate description of the decidua reflexa. Hunters' practice was chiefly among the upper classes and in the public estimation he was the foremost obstetrician of his time. His methods were quite conservative and he had a distinct dislike for the forceps which he but rarely used.

The *Anatomy of the Gravid Uterus*, exhibited in figures following, was published in 1774. Among his two posthumous works was the *Anatomical Description of the Human Gravid Uterus* (1794) which was reedited by E. Rigby in 1843.

THE ANATOMY OF THE GRAVID UTERUS*

PREFACE

The art of engraving supplies us, upon many occasions, with what has been the great desideratum of the lovers of science, an universal language. Nay, it conveys clearer ideas of most natural objects, than words can express; makes stronger impressions upon the mind; and to every person conversant with the subject, gives an immediate comprehension of what it represents.

From the time when this art came more generally into use, it has been much more easy to communicate and to preserve discoveries and improvements; and natural knowledge has been gradually rising, till it is at length become the distinguishing characteristic of the most enlightened age of the world.

Anatomy has, at least, kept pace in improvement with the other branches of natural knowledge. Many of the moderns, through much labour and patience, as well as ingenuity and judgment, have thrown considerable lights upon the structure and operations of the human body; and they have particularly by engravings, made the study of that art, in which humanity is so much interested, both more easy and pleasant. Most of the principal parts of anatomy have, in this manner, been successfully illustrated.

*Hunter, W. *The Anatomy of the Human Gravid Uterus*. Birmingham.
1774.

A N A T O M I A
U T E R I H U M A N I G R A V I D I
T A B U L I S I L L U S T R A T A.

A U C T O R E

G U L I E L M O H U N T E R,

S E R E N I S S I M A R E G I N A E C H A R O L T T A E M E D I C O E X T R A O R D I N A R I O,
I N A C A D E M I A R E G A L E A N A T O M I A E P R O F E S S O R E,
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B I R M I N G H A M I A N D J O A N N E S B A S K E R V I L L E, M D C C X X I V.

L O N D O N I E T R E A S U R E R Y O F S . B A K E R , T . C A D E L L , D . W I L S O N , C . N I C O L , & J . M U R R A Y .

T H E A N A T O M Y
O F T H E
H U M A N G R A V I D U T E R U S
E X H I B I T E D I N F I G U R E S.

B Y

W I L L I A M H U N T E R,

P H Y S I C I A N E X T R A O R D I N A R Y T O T H E Q U E E N , P R O F E S S O R O F
A N A T O M Y I N T H E R O Y A L A C A D E M Y , A N D F E L L O W O F T H E
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S O L D I N L O N D O N B Y S . B A K E R A N D C . L E I G H , I N T H E S T R E E T , T . C A D E L L , I N T H E S O U L E , D . W I L S O N A N D C . N I C O L
B E T W E E N T H E B U I L D I N G S , A N D J . M U R R A Y , I N T H E S E A T

TITLE PAGE

William Hunter: *The Anatomy of the Human Gravid Uterus*,
From the Library of Dr. J. F. Fulton.

One part however, and that the most curious, and certainly not the least important of all, the pregnant womb, had not been treated by anatomists with proportionable success. Let it not, however, be objected to them, that they neglected what in fact it was rarely in their power to cultivate. Few, or none of the anatomists, had met with a sufficient number of subjects, either for investigating, or for demonstrating the principal circumstances of utero-gestation in the human species. But let what cannot be praised, in others, be passed over in silence. With respect to the present undertaking, in the year 1751 the author met with the first favourable opportunity of examining, in the human species, what before he had been studying in brutes. A woman died suddenly, when very near the end of her pregnancy; the body was procured before any sensible putrefaction had begun; the season of the year was favourable to dissection; the injection of the blood-vessels proved successful; a very able painter, in this way, was found; every part was examined in the most public manner, and the truth was thereby well authenticated.

In the course of some months, the drawings of the first ten plates were finished, and from time to time the subject was publicly exhibited, with such remarks as had occurred in the examination of the several parts. Many lovers of this study approved of the author's proposal to publish the anatomy of the gravid uterus, illustrated by those ten plates: the work was immediately put into the hands of our best artists; and subscriptions were received.

PLATE VI

This represents the child in the womb, in its natural situation.

All the parts of this figure, except the womb, and its contents, are nearly the same as those represented by outlines in the fifth plate, where they are lettered and explained. The only difference is, that here all the upper part of the bladder is cut away, in order to shew the situation of the child's head in the lower part of the womb. All the forepart, both of the

womb and of the secundines (which included the placenta), is removed. The naval-string is cut, tied, and turned to the left side, over the edge of the womb. At the fundus the in-

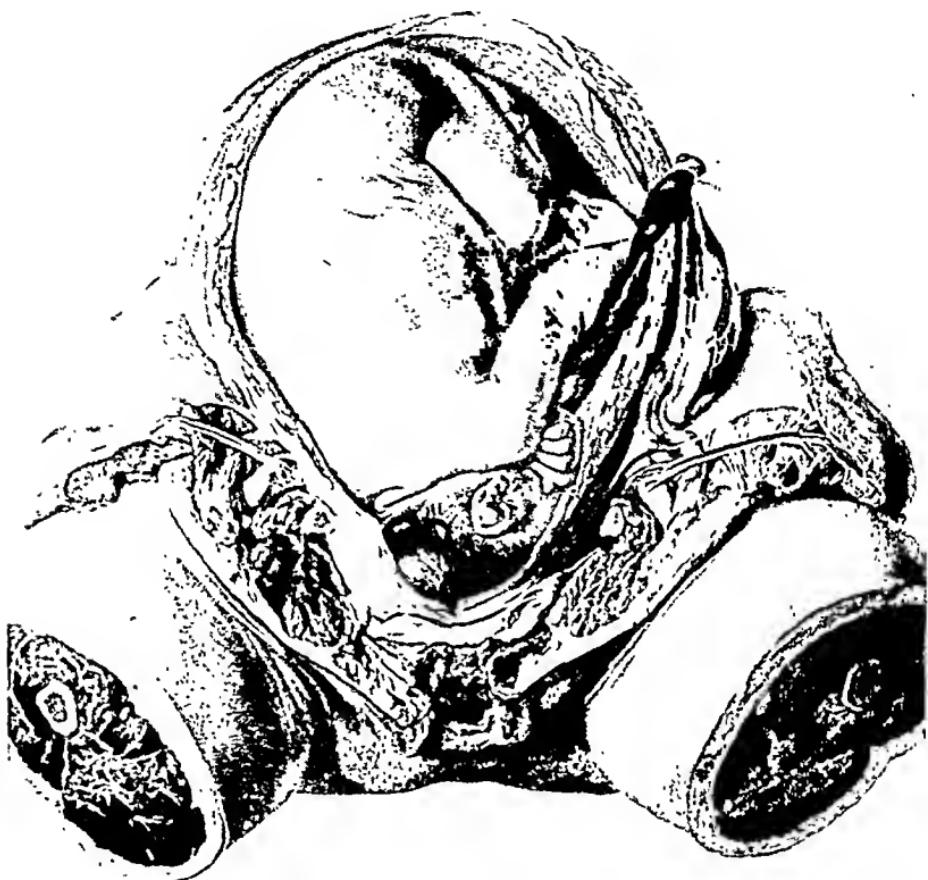


PLATE VI

William Hunter: *The Anatomy of the Human Gravid Uterus.*
From the Library of Dr. J. F. Fulton.

vesting membranes are likewise turned over the edge of the womb, that they might be more apparent. The head of the child is lodged in the lower part of the womb, or in the cavity of the pelvis; and its body lies principally in the

right side. Its position is diagonal or oblique: so that its posterior parts are turned forwards and to the right side of the mother, and its foreparts are directed backwards and to the left side. Its right foot appears between its left thigh and legs. Its body was covered with a white greasy mucus, which is commonly seen on children at their birth. This is presented at the upper part of its back, where it was intersected with lines, from the wrinkles and motion of the child's body. Every part is represented just as it was found; not so much as one joint of a finger having been moved to shew any part more distinctly, or to give a more picturesque effect.



John Stearns • 1770-1848

THE HISTORY of Ergot as a therapeutic agent is in its beginnings somewhat obscure. Camerius in 1688 writes of its use in certain parts of Germany to accelerate parturition. In 1774, M. Parmenier mentions in a letter that powdered ergot is used in slow labor, and in 1777, a surgeon of Lyons, Desgranges, published observations concerning the use of spurred rye in lingering labor. Medical historians, however, are quite agreed that the chief credit for the introduction of ergot in scientific obstetrics is due to Dr. John Stearns, an American physician born in Wilbraham, Massachusetts, May 16, 1770 and who died in New York City, March 18, 1848. Stearns was one of the leading practitioners in New York City during his period and, when the New York Academy of Medicine was organized in 1846, the honor of being its first president fell to Stearns. It was in 1807 that the first of his notable contributions on ergot appeared. In a letter dated at Waterford, N.Y., January 25, to Dr. S. Ackerly he wrote the following:

THE INTRODUCTION OF ERGOT*

In compliance with your request I herewith transmit you a sample of the pulvis parturiens, which I have been in the habit of using for several years, with the most complete suc-

* Stearns, John. *New York Medical Repository*, Vol. xi, 1807.

cess. It expedites lingering parturition, and saves to the accoucheur a considerable portion of time, without producing any bad effects on the patient. The cases in which I have



JOHN STEARNS (1770-1848)
From Thoms: *Chapters in American Obstetrics*.

generally found this powder to be useful, are when the pains are lingering, have wholly subsided, or are in any way incompetent to exclude the fetus. Previous to its exhibition it is of the utmost consequence to ascertain the presentation,

and whether any preternatural obstruction prevents delivery; as the violent and almost incessant action which it induces in the uterus precludes the possibility of turning. The pains induced by it are peculiarly forcing; though not accompanied with that distress and agony, of which the patients frequently complain when the action is much less. My method of administering it is either in decoction or powder. Boil half a drachm of the powder in half a pint of water, and give one-third every twenty minutes until the pains commence. In powder I give from five to ten grains; some patients require larger doses, though I have generally found these sufficient.

If the dose is large it will produce nausea and vomiting. In most cases you will be surprised with the suddenness of its operation; it is, therefore, necessary to be completely ready before you give the medicine, as the urgency of the pains will allow you but a short time afterward. Since I have adopted the use of this powder I have seldom found a case detained me more than three hours. Other physicians who have administered it concur with me in the success of its operation.

The *modus operandi* I feel incompetent to explain. At the same time that it augments the action of the uterus, it appears to relax the rigidity of the contracted muscular fibers. May it not produce the beneficial effects of bleeding without inducing that extreme debility, which is always consequent upon copious depletion? This appears to be corroborated by its nauseating effects on the stomach, and the known sympathy between this viscus and the uterus.

It is a vegetable, and appears to be a spurious growth of rye. On examining a granary where rye is stored, you will be able to procure a sufficient quantity from among that grain. Rye which grows in low, wet ground, yields it in greatest abundance. I have no objections to your giving this any publicity you may think proper.

In 1822, however, the advantages of ergot in obstetrics were firmly established in a masterly essay by the discoverer, John

Stearns. This was *Observation on the Secale Cornutum, or Ergot, with directions for its use in Parturition.** At that time he wrote:

It was not till the year 1807 that the ergot ever appeared before the public in a form to arrest the attention of medical men. Some years previous to this, I was informed of the powerful effects produced by this article, in the hands of some ignorant Scotch woman, in the county of Washington. Determined to try its efficacy, I produced a quantity from a field of rye. My information was such as to impress upon my mind the necessity of extreme caution in my first experiments. The continued influence of this impression upon my subsequent practice has been a source of much consoling reflection. It has tended to prevent those fatal errors which have so often occurred, and which, I trust, will be satisfactorily explained in the ensuing remarks. . . .

The publication of my letter to Dr. Ackerly, in 1807, produced an immense number of applications from remote practitioners. I immediately forwarded to each samples of the ergot, with directions for its use. . . . The success of the ergot is in no case more evident than in the selection of a suitable time of its exhibition. Although often given to procure abortion, it does not appear to have succeeded. It also generally fails to complete success when given in the early stages of labour, and before the *os uteri* is sufficiently dilated and relaxed. . . . I will now proceed to consider those indications which render its exhibition necessary and important.

The ergot is indicated, and may be administered,

I. When, in lingering labours, the child has descended into the pelvis, the parts dilated and relaxed, the pains having ceased, or being too ineffectual to advance the labour, there is danger to be apprehended from delay, by exhaustion of strength and vital energy from haemorrhage or other alarming symptoms.

II. When the pains are transferred from the uterus to other parts of the body, or to the whole muscular system, producing general puerperal convulsion.

*Stearns, J. *Medical Record*, Vol. v, 1822.

III. When in the early stages of pregnancy, abortion becomes inevitable, accompanied with profuse haemorrhage and feeble uterine contractions.

IV. When the placenta is retained from a deficiency of contraction.

V. In patients liable to haemorrhage immediately after delivery. In such cases the ergot may be given as a preventive, a few minutes before the termination of the labour.

VI. When haemorrhage or lochial discharges are too profuse immediately after delivery, and the uterus continues dilated and relaxed without any ability to contract.

I have thus exhibited a general view of the errors often committed in prescribing ergot, of the unfavourable results of such practice, of those cases in which it never ought to be administered, and of the indications which render its exhibition necessary and important. These remarks are derived from actual experience in several hundred cases, and are confirmed by those whose observations have been the most extensive and correct. While there is reason to suspect the influence of prejudice upon the minds of some who oppose its use, their own statements generally admit their very limited opportunities for witnessing its effects, and in some instances, while using it in their first experiments, on which their opinions were founded, that they grossly deviated from every direction calculated to ensure success.

While the frequent occurrence of such abuses is to be deplored, much satisfaction may be derived from this reflection, that a prudent and judicious use of this article has in a great variety of instances contributed to save the lives of the mother and child. That such will continue to be its effects when directed by a discreet, judicious, and experienced practitioner, we have the most satisfactory reason to infer from past experience, and from the peculiar properties and operation of the ergot.

Jean Alexandre Lejumeau (Viscomte de Kergaredéc) · 1787-1877

ALTHOUGH the auscultation of fetal heart was first recorded by Mayor, of Geneva in 1818 (*Biblioth. Univ. de Geneve*, vol. IX, Nov. 1818), it was recognised independently by Lejumeau de Kergaredéc in 1821 and it is his extraordinary monograph on the subject that brought to the attention of the profession the importance of this diagnostic procedure. Kergaredéc, who was a friend and pupil of Laennec, made his discovery accidentally while attempting to hear the sounds which he supposed the fetus would make splashing in the liquor amnii. While listening for these impossible sounds he heard the rapid beat of the fetal heart which he recognised at once. His training under Laennec at once made him appreciate the importance of his discovery and in the second edition of his great work on Auscultation, Laennec included the *Mémoire sur l'Auscultation, appliquée à l'Etude de la Grossesse* and stated that he had confirmed Kergaredéc's work. Kergaredéc had a distinguished scientific and literary career and a short time before his death received from the Academy its last and highest degree.

THE AUSCULTATION OF THE FETAL HEART*

Being unable to complete the reading of my memoir at the seance on the 26th, I have profited by the additional time and I have made further investigations. I have also requested several of my colleagues to do the same. The following are some new facts which I have added to those described in the first part of this memoir.

Firstly: In all the observations made previously, the double pulsations were heard on the side opposite that to which the lower extremities of the foetus were more especially directed. I found the opposite to be true in a case where the uterus seemed to be completely displaced to the right side of the abdomen. This exception did not invalidate the general proposition but only indicated that the position of the

* Lejumeau, J. A.: (de Kegaredéc) *Mémoire sur l'Auscultation, appliquée à l'Etude de la Grossesse*. Paris 1822.

foetus in this case was not that found in the majority of cases.

Secondly: It always seemed to me that the site of the simple pulsations was very circumscribed and that it was always found on the side of the abdomen opposite that where the double pulsations could be heard. However, this was not as constant as I had believed. In a visit to the Maternity Hospital with Lens and Laennec, we found the space occupied by the simple pulsations much more extended than in the cases reported above. We were even able to hear them at the posterior part of the abdomen. Nevertheless it was possible to determine the points of maximum intensity. In the case of a woman in the eighth month of pregnancy, it appeared that the point of maximum intensity was in the anterior part of the abdomen below the umbilicus and it extended equally to the right and left of the median line. The contractions of the foetal heart could only be distinguished on the right. The sounds were not loud and manifestly passed through the part that furnishes pulsations with a murmur. I was able to infer that the placenta was implanted on the anterior wall of the uterus and that the foetus was situated behind this mass.

Thirdly: In a woman at the fifth month of pregnancy the simple pulsations were heard with great intensity at the lower part of the abdomen somewhat to the left side. The foetal heart could not be heard at any point. A similar case was reported at the beginning of this memoir. On further reflection regarding this case, I believe that it must be thus in almost all cases. In fact, all obstetricans know that the placenta is most frequently inserted at the base of the uterus. When the uterus extends above the true pelvis it is necessarily the highest part that presents at first and it is directed anteriorly. Consequently, it is this part that is opposite the ear of the observer at first. At this time the foetus is still in the lowest and deepest part of the uterus. It should be added that during the early months of pregnancy the embryo is only slightly developed while the placenta has already reached a very considerable size. It results from this that the signs derived from

the uterine circulation should become manifest before those produced by the contraction of the foetal heart.

Fourthly: Finally, M. Laennec showed us how to distinguish the pulsations of the mother's heart at the middle left part of the abdomen in a woman in the eighth or ninth month of pregnancy who did not have any appreciable organic lesion, and at the lower right part of the abdomen in another woman at the same period of pregnancy but whose heart was evidently in a state of hypertrophy with dilatation. It is essential to note that much lesser frequency of these double pulsations does not allow them to be mistaken for those of the foetus.



The opposition which I have frequently observed between the side of the double pulsations and of the simple pulsations with a murmur has more than once enabled me to determine their respective locations from the observance of a single one of these phenomena. On the other hand, my conjectures were erroneous in some cases. However, it can be easily understood why this was so since the relative position of the foetus and placenta is not necessarily the same in all cases.

The foetus in the uterus assumes an ovoid form resulting from the anterior curvature of the trunk and the manner in which the extremities are flexed and applied to the anterior part of the body. It must be concluded from this that the back is the point through which the sound of the contractions of the foetal heart are transmitted outward most easily. Hence when this sound is rather loud there is reason to believe that it is the posterior part of the trunk which is opposite the observer. If the side or anterior part of the body presents, it is doubtful that the double pulsations could be heard, at least, they would be very weak; and as the foetus is subject to changes of position in the uterus so that the head becomes engaged in the superior strait during labor, it is possible that the suspension of the double pulsations reported above is due to this cause.

If the contractions of the foetal heart are heard at different points from those that I have observed, such as, for example at the level of and above the umbilicus, there is reason to believe that the position of the ovoid is not absolutely the same as in the usual cases or that the double pulsations are not perceptible to such a great height.

On carefully studying the various circumstances reported in this paragraph, it is not improbable that some time in the future it will be possible to determine the position of the foetus in the uterus with some degree of exactitude.



Sir James Young Simpson · 1811-1870

SIR James Y. Simpson was the youngest of seven sons of a village baker in Bathgate, Scotland. He was born June 7, 1811. At the age of fourteen, he entered Edinburgh University and two years later began to study medicine, receiving his M.D. in 1832. In 1839 he was appointed to the chair of midwifery at 28 years of age. In 1846, when the news of the first trials of ether (sulphuric) was made known, he at once adapted the measure to obstetric practice. He soon came to the conclusion, however, that a more efficient and potent anesthetic was desirable and this he set out to find. On Nov. 4, 1847, Simpson and two associates discovered the anesthetic properties of chloroform and two weeks later he made a successful public trial of the discovery at the Edinburgh Infirmary. Its use, particularly in obstetrics, was denounced as dangerous to health, morals and religion and Simpson had to battle stubbornly against unprecedented prejudice. The victory was finally won and chloroform as an anaesthetic came into universal use.

In 1847 Simpson was appointed one of Her Majesty's physicians for Scotland. Included in his many orders and honors was a D. C. L. from Oxford in 1866 and in that same year he received a baronetcy, the first to be given to a doctor practicing in Scotland.

Simpson's chief contributions apart from his contribution to anaesthesia were mainly in obstetrics and gynecology. Some biographers claim him as the chief individual concerned in laying the

foundation of Gynecology as a separate branch of medicine. His contributions include the invention of the uterine sound, sponge tent, a new forceps, and his writings include papers on ovariotomy, version in contracted pelvis and acupressure as a means of hemostasis. Simpson devoted his attention to literature as well as science as witnessed by his three volumes on antiquarian subjects.

His monograph on hermaphroditism remains today an extraordinary exposition of this subject. Berry Hart says of him "By his achievements and mental power he claims the association in the history of medical science with Harvey, Jenner and Lister." Simpson died May 6, 1870 and under his bust in Westminster Abbey are inscribed these words "To whose genius and benevolence the world owes the blessings derived from the use of chloroform for the relief of suffering. Laus Deo."

ON CHLOROFORM*

From the time at which I first saw Ether-Inhalation successfully practised in January last, I have had the conviction impressed upon my mind, that we would ultimately find that other therapeutic agents were capable of being introduced with equal rapidity and success into the system, through the same extensive and powerful channel of pulmonary absorption. In some observations, which I wrote and published in February last, relative to the inhalation of sulphuric ether in midwifery, I stated that, in several obstetric cases, I had used ergot of rye in this way, along with ether.—(See Monthly Journal of Medical Science, pp. 724; and 795, case of successful inhalation of opium, to arrest the vomiting of pregnancy.)

With various professional friends, more conversant with chemistry than I am, I have, since that time, taken opportunities of talking over the idea which I entertained of the probable existence or discovery of new therapeutic agents, capable of being introduced into the system of respiration, and the possibility of producing for inhalation vaporizable or volatile preparations of some of our more active and old

* Simpson, J. Y. *Account of a New Anaesthetic Agent as a Substitute for Sulphuric Ether, Etc.* Edinburgh, 1847.

established medicines: and I have had, during the summer and autumn, ethereal tinctures, etc., of several potent drugs, manufactured for me, for experiment, by Messrs Duncan, Flockhart, & Co., the excellent chemists and druggists of this city.

Latterly, in order to avoid, if possible, some of the inconveniences and objections pertaining to sulphuric ether,—(particularly its disagreeable and very persistent smell, its occasional tendency to irritation of the bronchi during its first inspirations, and the large quantity of it occasionally required to be used, more especially in protracted cases of labour,) —I have tried upon myself and others the inhalation of different other volatile fluids, with the hope that some one of them might be found to possess the advantages of ether, without its disadvantages. For this purpose, I selected for experiment and have inhaled several chemical liquids of a more fragrant or agreeable odour, such as the chloride of hydro-carbon (or Dutch liquid), acetone, nitrate of oxide of ethyle (nitric ether), benzin, the vapour of iodoform, &c. I have found, however, one infinitely more efficacious than any of the others, viz., Chloroform, or the Perchloride of Formyle, and I am enabled to speak most confidently of its superior anaesthetic properties, having now tried it upon upwards of thirty individuals. The liquid I have used has been manufactured for me by Mr. Hunter, in the laboratory of Messrs. Duncan, Flockhart, & Co.

Chloroform was first discovered and described at nearly the same time by Soubeiran (1831), and Liebig, (1832); its composition was first accurately ascertained by the distinguished French chemist, Dumas, in 1835.—See the *Annales de Chimie et de Physique*, vols. xlviii. xlix. and lviii. It has been used by some practitioners internally; Guillot prescribed it as an anti-spasmodic in asthma, exhibiting it in small doses, and diluted 100 times.—(See Bouchardat's *Annuaire de Thérapeutique* for 1844, p. 35.) But no person, so far as I am aware, has used it by inhalation, or discovered its remarkable anaesthetic properties till the date of my own experiments.

It is a dense, limpid, colourless liquid, readily evaporating, and possessing an agreeable, fragrant, fruit-like odour, and a saccharine pleasant taste.

As an inhaled anaesthetic agent, it possesses over sulphuric Ether the following advantages:—

1. A greatly less quantity of Chloroform than of Ether is requisite to produce the anaesthetic effect; usually from a hundred to a hundred and twenty drops of Chloroform only being sufficient; and with some patients much less. I have seen a strong person rendered completely insensible by six or seven inspirations of thirty drops of the liquid.

2. Its action is much more rapid and complete, and generally more persistent. I have almost always seen from ten to twenty full inspirations suffice. Hence the time of the surgeon is saved; and that preliminary stage of excitement, which pertains to all narcotizing agents, being curtailed, or indeed practically abolished, the patient has not the same degree of tendency to exhilaration and talking.

3. Most of those who know from previous experience the sensations produced by ether inhalation, and who have subsequently breathed the Chloroform, have strongly declared the inhalation and influence of Chloroform to be far more agreeable and pleasant than those of Ether.

4. I believe, that considering the small quantity requisite, as compared with Ether, the use of Chloroform will be less expensive than that of Ether; more especially, as there is every prospect that the means of forming it may be simplified and cheapened.

5. Its perfume is not unpleasant, but the reverse; and the odour of it does not remain, for any length of time, obstinately attached to the clothes of the attendant,—or exhaling in a disagreeable form from the lungs of the patient, as so generally happens with Sulphuric Ether.

6. Being required in much less quantity, it is much more portable and transmissible than Sulphuric Ether.

7. No special kind of inhaler or instrument is necessary for its exhibition. A little of the liquid diffused upon the

interior of a hollow-shaped sponge, or a pocket-handkerchief, or a piece of linen or paper, and held over the mouth and nostrils, so as to be fully inhaled, generally suffices in about a minute or two to produce the desired effect.

I have not yet had an opportunity of using Chloroform in any capital surgical operation, but have exhibited it with perfect success, in tooth-drawing, opening abscesses, for annulling the pain of dysmenorrhœa and of neuralgia, and in two or three cases where I was using deep, and otherwise very painful galvano-puncture for the treatment of ovarian dropsy &c. I have employed it also in obstetric practice with entire success. The lady to whom it was first exhibited during parturition, had been previously delivered in the country by perforation of the head of the infant, after a labour of three days' duration. In this, her second confinement, pains supervened a fortnight before the full time. Three hours and a-half after they commenced, and, ere the first stage of the labour was completed, I placed her under the influence of the Chloroform, by moistening, with half a tea-spoonful of the liquid, a pocket handkerchief, rolled up into a funnel shape, and with the broad or open end of the funnel placed over her mouth and nostrils. In consequence of the evaporation of the fluid, it was once more renewed in about ten or twelve minutes. The child was expelled in about twenty-five minutes after the inhalation was begun. The mother subsequently remained longer soporose than commonly happens after Ether. The squalling of the child did not, as usual, rouse her; and some minutes elapsed after the placenta was expelled, and after the child was removed by the nurse into another room, before the patient awoke. She then turned round and observed to me that she had "enjoyed a very comfortable sleep, and indeed required it, as she was so tired, but would now be more able for the work before her." I evaded entering into conversation with her, believing, as I have already stated, that the most complete possible quietude forms one of the principal secrets for the successful employment of either Ether or Chloroform. In a little time she again remarked that she

was afraid her "sleep had stopped the pains." Shortly afterwards, her infant was brought in by the nurse from the adjoining room, and it was a matter of no small difficulty to convince the astonished mother that the labour was entirely over, and that the child presented to her was really her "own living baby."

Perhaps I may be excused from adding, that since publishing on the subject of Ether Inhalation in Midwifery, seven or eight months ago, and then for the first time directing the attention of the medical profession to its great use and importance in natural and morbid parturition, I have employed it, with few and rare exceptions, in every case of labour that I have attended; and with the most delightful results. And I have no doubt whatever, that some years hence the practice will be general. Obstetricians may oppose it, but I believe our patients themselves will force the use of it upon the profession. I have never had the pleasure of watching over a series of better and more rapid recoveries; nor once witnessed any disagreeable result follow to either mother or child; whilst I have now seen an immense amount of maternal pain and agony saved by its employment. And I most conscientiously believe that the proud mission of the physician is distinctly twofold—namely, to alleviate human suffering, as well as preserve human life.



John Braxton Hicks · 1823-1897

BRAXTON HICKS' name is known to the present generation chiefly in connection with two subjects, "combined internal and external version" and "intermittent uterine contractions." His contributions to the first named subject were not a little anticipated by M. B. Wright (*vide infra*). However in the light of our modern concept of the physiology of the uterine musculature, Hicks' rôle in bringing to attention the phenomenon of intermittent uterine contractions during pregnancy, is an important one. J. Braxton

Hicks was born in Rye, Sussex, England, February 23, 1823 and graduated in Medicine in 1847. For 23 years he was Obstetrical Physician to Guy's Hospital, retiring at the age limit of sixty years and continuing his teaching at St. Mary's Hospital. He was President of the London Obstetrical Society in 1871 and received many honors from societies outside his native country. Hicks was not only a frequent contributor to the medical literature of his day but also wrote on botanical and entomological subjects.

ON THE CONTRACTIONS OF THE UTERUS THROUGHOUT PREGNANCY*

If we more carefully investigate the uterus after the fourth month of pregnancy we shall further notice the phenomenon, which has been well described by authors, that during the period of relaxation the foetus (if one be there) is generally to be detected by external palpation or by external ballotment. By internal ballotment also, in consequence of the increased impressibility of the uterine wall, we can make out the foetal presence, its contour, often its movements, and its capability of being moved. But it is interesting also to notice, during the gradual increase of solidity, how the presence of the foetus, quite dis-



Braxton Hicks

JOHN BRAXTON HICKS (1823-1897)

* Hicks, Braxton J. *On the Contractions of the Uterus throughout Pregnancy*. *Transactions of London Obstetrical Society*. 1872, xiii.

tinct before, slowly becomes more indistinct, whilst the outline of the uterus becomes more clearly marked, till instead of the foetus we find a hard globular swelling, which we could at the time we recognised the foetus, scarcely, if at all, feel. That this phenomenon extends from the early period I have already mentioned, to the time of labour, is a fact to which I have never seen but one exception during the course of observations extending over about eight years; and this apparent single exception might have been none at all had a more prolonged examination been carried out at a time. It occurred in a case of paraplegia. Although she was under my care some time, and was subjected to frequent examination, yet the uterus was never found to contract. She went out of the hospital before labour arrived, but the labour was natural.

The constancy with which these contractions of the uterus have always occurred to me leaves no doubt on my mind but that it is a natural condition of pregnancy irrespective of external irritation.

In a general way the pregnant woman is not conscious of these contractions of the uterus, but sometimes she will remark that she has a tumor in her lower abdomen, thinking it a constant thing; but another will observe that she has a swelling sometimes, but which vanishes at other time. But occasionally it happens that the uterus is more than usually sensitive, and that the contractions are accompanied by pain; and then on examination it is found that each pain she complains of is coincident with a contraction.

Again, when the uterus has been excited by any cause, and these contractions are more than usually powerful, the woman is conscious of their presence, and by watching these we shall convince ourselves that the contractions, which were before unnoticed by her, are really the same as the so-called "pains" of premature expulsion of the foetus and also of true labour.

Sometime I have found the contractions last a considerable time, longer often than the intervals; and this is more frequently the case if the uterus contain a diseased ovum, and

particularly a solid or carneous mole; but in general the contraction from its commencement to final recession lasts about five minutes. The duration both of contraction and interval varies very considerably.

But it is not only in healthy pregnancy that this phenomenon exists; it is well marked, as just mentioned, where the foetus is dead; it is also to be found where the foetus is absent, as in the case of hydatidiform degeneration of the chorion. (vesicular mole).

How far this action is the same as the peristaltic or vermicular movement observed in the lower animals one can hardly say, but one can hardly doubt a close analogy to it if not identity with it. But when excited into a more vigorous state there can be no doubt but they are of the same character and identical with "labour pains." And this serves to explain how it is that at a short notice we can bring on labour, and how it is that the uterus shall respond in a few hours (have seen labour artificially induced accomplished without any traction in two hours) so as to expel the foetus at the sixth month as well as it does at the ninth month.

By our manipulation we simply exaggerate the action already going on to such an extent that the natural process exhibited by the uterus at labour at full term continues till the foetus is expelled. In other words, we supply that stimulus which nature herself supplies at the beginning of labour at full term. The rest of the process is precisely similar. We need not, with the cognizance of this intermittent action, any longer wonder how it is that suddenly a new function is given to the uterus at the end of the ninth month; it is already in active exercise, not perceptible to the pregnant woman, though it is to the examining hand. We also find in this frequent contraction an explanation of the change of note in the uterine souffle. Every one conversant with the sounds of pregnancy has noticed how that while listening to the sounds formerly called placental, but now acknowledged to be uterine, the loud sonorous sound has become gradually higher till it is almost a shrill piping musical one. It has puzzled many

authors to explain this, but one sees no difficulty in it; the diameters of the uterine sinuses are slowly reduced by the contraction of the walls, the rapidity of the rush of the blood increased, and the pitch of the sound consequently heightened. It also explains the phenomenon of "after pains," in which we see a continuation of the same intermittent movements after the removal of the exciting cause. It is probable that the enlarged state of the cavity after labour allows the exhibition of the action, and the uterus being more sensitive than before labour sets in, the contractions are more productive of pain than during pregnancy. As the cavity becomes smaller, and the walls relatively thicker, and as the uterus resumes its natural state of insensitiveness, the contractions are not any longer recognised unless exaggerated during suckling.

It is not impossible that something akin to this is going on in the unimpregnated uterus; at least, we find not unfrequently that mental emotions and other exciting causes do bring on a forcing sensation in the empty womb.

* * *

Let me next consider the effects or uses of these contractions. It is possible that there are others, but two appear to be tolerably clear.

In the first place, it will provide for the frequent movement of the blood in the uterine sinus and decidual processes, for as the sinuses of the uterus are so much larger than the supplying arteries, the current is more slow in them than in the ordinary systemic veins. The contraction of the walls through which the sinuses meander tends to send the current onward, and to act somewhat as a supplementary heart.

Besides this, it facilitates the movement of the fluid in the intervillal space of the placenta, or in that which is called the placental sinuses. Whatever view we may hold of the structure of the placenta, whether, on the one hand, there be blood amongst the villi in maternal sinuses, or, on the other, merely a serous fluid, in any case it is through one or the other medi-

um the villi absorb the material for the aeration, &c., of the foetal blood; and there can be no doubt that from its position it must be more or less in a stagnant state, for even if it be blood, this entering in by small openings into a much larger area, and making its exit also by small openings, must necessarily proceed at a very much slower rate, as has been pointed out by Dr. A. Fare, article *Uterus*, 'Cyclopaedia of Anatomy and Physiology.' It is not difficult, therefore, to recognise the effect which the change in the solidity and shape must produce on the fluids in the placenta as well as on that of the uterine walls; in other words, the contractions act as a kind of supplementary heart to the fluids in the uterine walls and the placenta.

In the second place, the uterine action adapts the position of the foetus to the form of the uterus. There has been, as is well known, much dispute as to the cause of the head presenting so frequently in labour as it does. There can be little doubt but the more recent opinion is the correct one, namely, that the motions of the foetus combined with the preparatory pains of labour to secure the head to present. For it has been also well shown that the head of the foetus when folded up in utero is not really the larger end, but that the body with the limbs forms the greater portion; and as the uterus is larger at its fundal end than below, the foetus folded up corresponds to the shape of the uterus only when the head presents at the os.



For the last six years and upwards I have made use of the intermittent action of the uterus as the principal symptom upon which I have depended in the diagnosis of pregnancy. I am not aware that I have been less successful than others in determining the existence of pregnancy; on the contrary, I have felt myself at an advantage in the possession of an additional sign to make up the deficiency or temporary inapplicability of the others; as, for instance, when external noise prevents the heart sounds from being heard.

Alfred Hegar · 1830-1914

HEGAR, whose name is memorialized in Hegar's sign, described first by his assistant Reinl, was born in Darmstadt Jan. 13, 1830. He was educated at Giessen, Heidelberg, Berlin, and Vienna and began his career as a practicing physician in his native city. In 1864 he was called to Freiberg as Professor of Obstetrics and Gynecology. Besides his work on the diagnosis of early pregnancy, he made valuable contributions to our knowledge of tubal tuberculosis, placental retention, pathology of the ovum and abortion, and puerperal infection. To Hegar, also, we are indebted for his pioneer work in abdominal operative procedures in gynecological conditions. Following the lead of Robert Battey, he developed in Germany, as Tait did in England, many of the fundamentals of gynecological operative technique.

A POSITIVE SYMPTOM FOR THE DIAGNOSIS OF PREGNANCY IN THE FIRST MONTHS

BY DR. C. REINL*

Apart from the sensory disturbances in the general condition, the absence of menstruation, the changes in the breasts; apart from the genitalia, the changes of consistency in the enlarged body of the uterus and the cervix, we have no further diagnostic signs in the first month of pregnancy.

The discovery of a new sign should therefore be of value, inasmuch as some of the local changes mentioned above are often missing, or only present in a slight degree, or in persons with repeated pregnancy not able to be evaluated.

In the course of the last winter I had the opportunity, in Professor Hegar's gynaecological clinic, of acquainting myself with a new and excellent sign of pregnancy in the first months.

This consists of the presence of an unusual softness, flexibility, and thinning of the lower uterine segment—that is, of the segment immediately above the insertion of the sacro-uterine ligaments.

* Reinl, C. *Prager Medicinische Wochenschrift*. 25th June, 1884. No. 26.

This condition of the organ in question is not only demonstrable when the remainder of the corpus feels solid and hard (as is not seldom the case), but also clearly in evidence when it appears soft and elastic.

Even in the latter instance there is a possibility of compressing the lower uterine segment, of drawing it out to a certain extent with the finger, and thus of separating it from the upper parts, while below the more consistent cone of the cervix is clearly distinguished. The flexibility and softness of that organ can be so marked that one may remain in doubt as to whether there is really any connection between the cervix and the larger swelling in the abdomen or pelvis.

Now we know of no condition which could present similar conditions to that of pregnancy, certainly hard tumours could not, and both haemato- and hydrometra offer no diagnostic difficulties. Hence our sign for the differential diagnosis of pregnancy can certainly be of excellent use.

The cause of this marked phenomenon should be sought in the fact that the lower uterine segment, as the thinnest part of the entire corpus because of pregnancy becomes succulent, loosened up, thinned and very elastic, since one is able (as can easily be demonstrated) by pushing the uterus up-



ALFRED HEGAR (1830-1914)

ward, to grasp that organ between the examining and the palpating fingers; and can compress it so to speak, and to a certain extent thin it with the fingers.

However the absence of this condition does not exclude the possibility of a pregnancy, since it is easily conceivable that pregnancy can occur in conjunction with significant chronic infarct formation, without this condition in the lower uterine segment being very clearly demonstrable.

In the following I present a series of cases observed in the clinic at Freiburg:

1. Mrs. R. von Hartheim 33 years of age.

Last period, end of October 1883.

Condition from the 29th January 1884.

Breasts well developed but very flabby, Montgomery's glands strongly protuberant, nipples and areola of nipples not turgescient, when pressed, very slight light colostrum.

Abdomen swollen, large cushions of fat; Linea alba can be seen with but a trace of pigmentation. The mucous membrane of the introitus only slightly bluish, on the other hand the vault of the vagina strongly colored with blue.

The portio vaginalis surrounding the os uteri, especially on the forward labium, distinctly blue, in other respects faint in color, moderately swollen, cylindrical.

The body of the uterus has the size of a small child's head and feels particularly hard.

If one examines per anum and presses directly behind the pubic symphysis posteriorly and downward, the finger introduced into the rectum presses up against the cervix, and passes by the upper end of the cervix; while the tumour is lifted high, so that one has the impression that the cervix uteri ceases above, and that the upper swelling is something apart by itself.

Yet one is convinced that, where the cervix ceases, something soft begins. If one presses down the swelling now, again the connection becomes unmistakable, and one feels distinctly that the more consistent cervix passes above into a softened mass, which then again joins with the harder swelling above.

The softened position can be compressed by the finger brought against it, and at the same time thinned out.



Adolph Pinard · 1844-1934

THE PRACTICAL importance of abdominal palpation as an aid to obstetrical diagnosis was not generally recognised until 1878 when Pinard published his classic treatise on the subject. Pinard was born at Méry-sur-Seine on February 4, 1844. He was a medical student at the time of the Franco-Prussian War in 1870 and he entered the service, winning the Cross of the Legion of Honor on the battlefield. Following the war, he became an interne in the hospitals and in 1875 passed to the Maternity hospital where he taught the student mid-wives. His thesis, presented in 1874, was on "The defects of Conformation of the Pelvis, studied from the Stand-point of the Conformation and the Antero-posterior Diameter." In 1878 Pinard was named associate professor of the Faculty, at which time he was given the task of assisting Pajot in his official course in obstetrics. Pinard wrote a number of valuable papers on both gynecological and obstetrical subjects but his master work is that referred to above. In 1890, when the Chair of Clinical Obstetrics at the Faculty of Medicine became vacant, Pinard was called to the post, and in the next year he was elected a Member of the Academy of Medicine. The following transcription is taken from Neale's translation, which was published in New York, 1885. The importance of Pinard's work is shown by the fact that today no material advance over his methods has been made.

METHOD OF EXAMINING*

One may stand indifferently to the right or to the left of the women, but it is necessary that the accoucheur should stand at about the height of the umbilicus.

One should then examine the thickness of the abdominal wall, for the sensations perceived will be more or less distinct

* Pinard, A. *A Treatise on Abdominal Palpation, as Applied to Obstetrics, and Version by External Manipulations*. Paris, 1878. Translated by Neale, L. E. J. H. Vail & Co. New York, 1885.

and superficial, just in proportion as the abdominal wall is more or less thick.

This examination is very easily made in all cases; it is only necessary to catch up a fold of the wall, and the thickness of this fold will inform us sufficiently. At this moment palpation really begins.

Where should one begin to palpate?

Should one seek indifferently any part of the foetus: and place the hands either above or below?

Nearly all accoucheurs who use this method of examination, advise, to begin by seeking the head; others say, first map out the uterus, depress its different parts indiscriminate-

ly from above downwards, or from below upwards, from right to left or from left to right and then analyze the sensations perceived, and finally arrive at a diagnosis by synthesis.

These different methods of examining present great inconveniences, and every time I have made the students palpate without giving them other rules, I have seen them misled and make false diagnoses. Indeed, it is hard to understand why this should not be so; the head does not always constitute a fixed sign; it may be deeply engaged in or situated immediately above the superior strait. The planes of resistance may be found in nearly every part of the abdomen, as is shown in the diagrams of this chapter. Therefore, in analyzing with

ADOLPH PINARD (1844-1934)



care the sensations perceived, it is only with difficulty that one can mentally *see* the foetus in utero. That those accoucheurs accustomed to practice palpation, do recognize the various attitudes of the foetus during the latter period of pregnancy, and are able to make an exact diagnosis after the above method, can not be doubted; but at the same time, they well recognize the fact that it requires a long experience to arrive at such a result.

For these reasons I have endeavored to simplify the method, to render it rational, and make it rest entirely on the exact knowledge of the various attitudes the foetus may assume during the last month of gestation; i.e. the accommodation.

Thus, attentive observation has shown that at the time of labor only certain parts of the foetus can present at the superior strait, and not any part as was thought for so long a time; we now know that during pregnancy the product of conception obedient to physical laws, takes determinate attitudes, is governed by determinate causes, and not by indifferent and accidental circumstances.

The touch, in relation to the diagnosis of presentations and positions did not become either possible, easy or precise, until the close of the epoch when the labors of Lachapelle, Dubois and Naegele destroyed the table of ancient ideas and simplified the classification of both presentations and positions. Before that period, and indeed even during the time of Baude-locque, the obstetrician upon introducing his finger in the genital tract, was obliged to confront himself with this question: which one of the 6 presentations and the 102 positions shall I find?

Today, the method of examination has become relatively easy, so that the student knows the finger can only meet with three parts of the foetal body, with their two varieties and four positions.

But palpation is not so easy unless one has some idea of the normal or abnormal situations the foetus may take towards the end of gestation.

Knowing that the cephalic extremity should be found in

the pelvic excavation (all conditions being physiological,) it is then that region which should be first examined. There is still another advantage in this method, viz: the diagnostic marks of the mother instead of the foetus, are fixed.

EXAMINATION OF THE EXCAVATION

It is necessary to find the pubis and its horizontal rami, i.e. the superior opening to the excavation or the anterior part of the superior strait.

It is absolutely indispensable to recognize this point, as it is only after this, that it will be possible to appreciate the degree of engagement of the foetal part, which will be more or less marked, according as the presentation is found above or below this point.

In nearly all women, it is quite easy to find with the extremity of the fingers the superior border of the anterior curve of the pelvic brim; with some, and particularly with those who have the abdominal wall thin and extensible, and the uterus in anteversion, the pendulous abdomen, or even those who have a very pronounced inclination of the superior strait, an anteversion of the pelvis, it becomes necessary first to raise up the sagging abdomen with the palms of the hands, and then to seek the points above indicated.

The examiner should then interrogate the excavation. For that purpose, placing the hands about five or six centimetres to the right and left of the median line, the extremities of the fingers being in relation with the anterior curve of the pelvis, he depresses the abdominal wall from above downwards and from before backwards, just grazing over the horizontal rami of the pubes.

When properly palpating, only two sensations may be perceived, viz: the fingers experiencing a sensation of resistance, resulting from contact with a hard, round, and voluminous body which fills the excavation, can not penetrate deeper; or, on the contrary, they only meet with the resistance offered by the soft parts, and can therefore sink more or less deeply into the excavation.

CHAPTER II
THE COURSE OF LABOR

Paul of Aegina · 625-690

PAULUS AEGINETA, the last of the eminent Greek authors on Medicine, is so called from his birthplace, the island of Aegina. Practically nothing is known of his life and there is a great difference of opinion among modern authors as to the century in which Paul lived. Adams says that he could not have lived at an earlier period than the end of the sixth or the beginning of the seventh century. While the works of Paul are chiefly compilations, they are those of a learned physician and a man well versed in all the branches of medicine of his time. Some idea of his eminent position can be gained by the following quotation from Adams who says "All the medical authors of the distinguished Arabian period quote his opinions in almost every page of their works and never fail to recognise him as one of the most eminent of their Grecian masters." Suidas states that Paul wrote several medical works but the one which has come down to us is usually called *De Re Medica Libri Septem*. In the first book he treats of the complaints of pregnant women, and in the third book we find a considerable part devoted to diseases of women. It is from this latter that the following transcription is taken. It is probable that most of the material is that taken from Aetius. This selection was chosen chiefly because of the concise and graphic picture that it presents of the obstetrical thought and procedure of that day.

ON DIFFICULT LABOUR*

Difficult labour arises either from the woman who bears the child, or from the child itself, or from the secundines, or from some external circumstances. From the woman in labour, either because she is gross and fat, or because her whole womb is small, or because she has no pains, or is affected with fear, or because the uterus or some other part is inflamed or otherwise diseased, or because, from some natural weakness, she is

* Adams, Francis. *The Seven Books of Paulus Aegineta*, London, 1841, vol. 1.

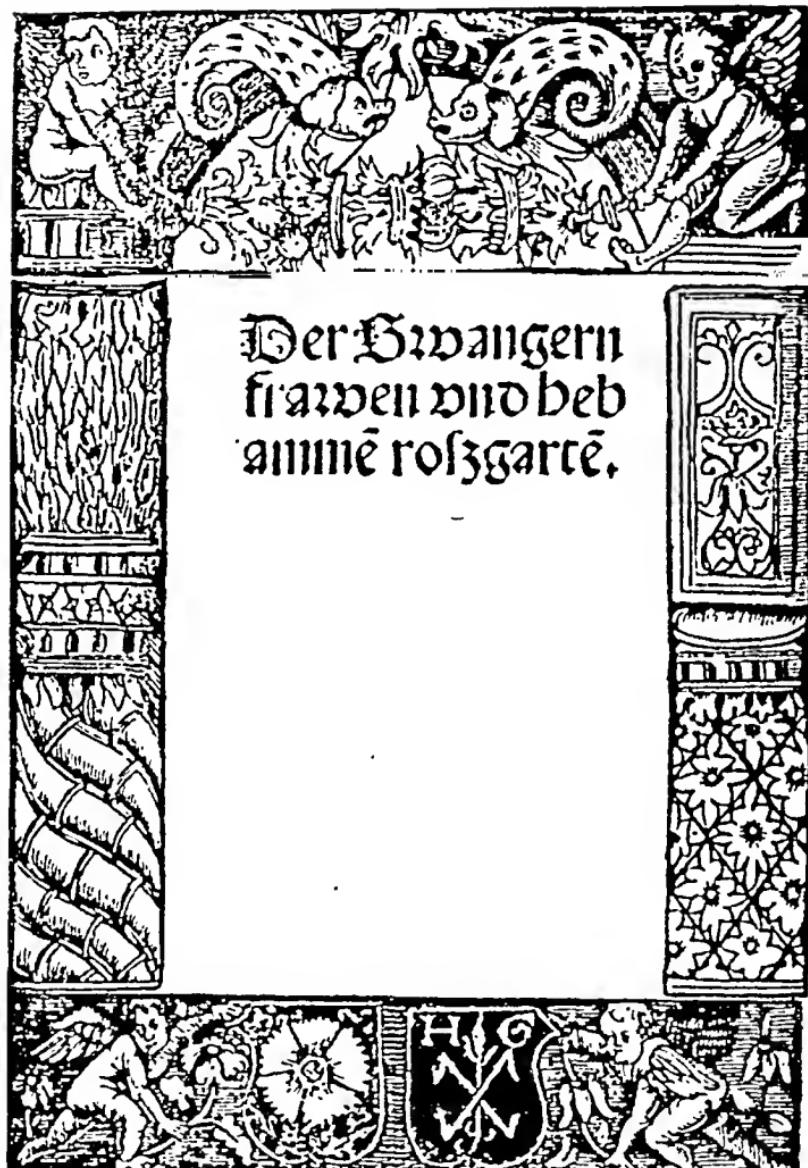
unable to expel the foetus, or because the labour is premature. From the child, either because it is too large; or small, and of little weight; or from its having hydrocephalous head; or from being a monster, such as having two heads; or because it is dead; or, although alive, because it is weak and unable to advance outwards; or because there happens to be several children, as Herophilus relates a case of five; or because the position is preternatural. For the natural position of the child is, first, when its head presents with the hands bent upon the thighs, and having its head directly applied to the mouth of the womb; and next to that, when it descends by the feet, and there is no turning aside. All the other positions except these are preternatural. Or from the secundines, either because the membranes cannot be torn, owing to their thickness; or because they have been torn prematurely, owing to their thinness; for when the waters are evacuated unseasonably, the foetus gets out with difficulty, from the dryness of the parts. From external circumstances, either from cold contracting or immoderate heat dissipating the powers, or from some accidental occurrence. Wherefore, if the difficulty of parturition arise from constriction, and, as it were, impaction of the foetus, we must first endeavor to produce relaxation by injecting frequently hot sweet-oil with the decoction of fenugreek, or mallows, of linseed, or with eggs as a pareogoric. Then we must apply cataplasms to the pubes, abdomen, and loins, or linseed or of honied water, or of oil and water; and use hipbaths of a similar nature. We must also avail ourselves of the relaxation produced by baths, if neither fever nor any other cause prohibit; and the woman is to be moved on a couch in a moderately warm air. Some have had recourse to powerful shaking, and have applied sternutatories. If the woman be in low spirits, she is to be encouraged; and if she is inexperienced in labour, she is to be directed to keep in her breath strongly, and to press down to the flanks. If she be in a swoon, she is to be resuscitated by such strong-smelling things as are not stimulant; and when moderately recovered, she is to be supported with a little food. A woman that is fat is to be placed in bed in a prone position, bending her knees

upon her thighs, in order that the womb, being carried to the abdomen, may present with its mouth direct. By means of the fingers the mouth is to be smeared with cerates or fatty substances, and gently dilated. And if there be any complaint in the parts, it must be previously attended to; and hardened faeces when retained must be expelled by an emollient clyster. The membranes may be divided either by the fingers, or by a scalpel concealed within them, the left hand directing it. And some of the fatty liquids may be thrown up into the uterus by a syringe. When the foetus is in a preternatural position, we may restore the natural position, by sometimes pressing it back, sometimes drawing it down, sometimes pushing it aside, and sometimes rectifying the whole. If a hand or foot protrude, we must not seize upon the limb and drag it down, for thereby it will be the more wedged in, or may be dislocated, or fractured; but fixing the fingers about the shoulders or hip-joint of the foetus, the part that had protruded is to be restored to its proper position. If there be a wrong position of the whole foetus, attended with impaction, we must first push it upwards from the mouth of the womb, then lay hold of it, and direct it properly to the mouth of the uterus. If more than one child have descended, they are to be raised upwards again, and then brought downwards. Everything is to be done gently, and without pressure, the parts being smeared with oil. The time for placing the woman on the stool is when the mouth of the womb is open and meets the finger, and when rupture of the membranes is at hand. If, owing to the death of the child, or any other cause, it do not advance, we must proceed to embryotomy.



Eucharius Rösslin . -1526

RÖSSLIN was the first to seize the opportunity given by the discovery of printing to publish his obstetrical treatise in German so that it could be understood by the midwives. This was the first printed work written especially for midwives. Rösslin Roslin, or



TITLE-PAGE OF ONE OF THE 1513 EDITIONS OF THE "ROSENGARTEN"
From a copy in the Library of the Royal Society of Medicine.

Rhodion as he is variously known, was a German physician first at Worms, afterwards at Frankfort on the Main. According to documentary evidence, Rösslin was an apothecary at Freiburg in Briesgau in 1493. In 1506 he was elected physician to the City of Frankfort and in 1508 he entered the service of the Duchess of Brunswick and Luneberg. It is to her that his work is dedicated. According to Baas, Rösslin died in September 1526. It is stated by

Rosengarten
Das vierd Capitel sagt wie
 sich ein ede fraw in vor vnd nach der gebur. halte soll
 vnd wie man in harter geburt zu hilff kommen soll.



SHOWING MIDWIFE EXAMINING PATIENT SEATED IN THE BIRTH CHAIR
 From the copy of the 1513 edition of the "Rosengarten" in the library
 of the Royal Society of Medicine.

G. Klein that about 100 editions of the Rosengarten are known, three editions being published in 1513. Under the title *De partu hominis*, Rösslin's son published a Latin translation of which, according to Klein, 11 or 12 editions appeared, the first in 1532.

The Rosengarten was translated into English by Jonas under the title "The Byrthe of Mankynde" and published for the first time in 1540. A second amended translation was made by T. Raynalde, who used the edition of E. Rösslin the Younger.

The Rosengarten contained little that was original but it had the merit of being written in the vernacular in which it could be read by midwives in whose hands the practice of midwifery almost entirely lay. It was the first work dealing with obstetrics apart from medicine and surgery and, in its illustrations, gave for the first time printed figures of the birth chair, the lying-in chamber, and the positions of the fetus in utero. Some of the plates are of high artistic merit and were copied by subsequent writers including Rueff and Paré.



THE COURSE OF LABOR*

p100

Now when the woman perceiveth the Matrix or Mother to waxe laxe and loose, and to be dissolved, and that the humours issue foorth in great plenty, then shall it be meete for her to sit downe, leaning backward, in manner upright; for which purpose in some regions (as in France and Germanie) the Midwives have stooles for the nonce, which being but low, and not high from the ground, be made so compassewise and cave or hollow in the middest, that that may be received from underneath which is looked for, and the backe of the stoole leaning backward, receiveth the backe of the woman. The fashion of the which stoole, is set in the beginning of the Byrth figures hereafter.

And when the time of labour is come, in the same stoole ought to be put many cloathes or clows in the backe of it, the which the midwife may remove from one side to another, according as necessity shall require. The Midwife her selfe shall sit before the laboring woman, and shall diligently observe and waite, how much, and after what meanes the child

* Transcription from *The Birth of Man-Kinde, Otherwise Named The Womans Booke*. Set forth in English by Thomas Raynald, Physitian, London 1634. (Copy in possession of Sterling Memorial Library, Yale University).

stirreth it selfe: also shall with hands, first anoynted with the oyle of almonds or the oyle of those white lillies, rule and direct everything as shall seeme best.

Also the midwife must instruct and comfort the party, not only refreshing her with good meate and drinke, but also with sweet words, giving her hope of a good speedie deliverance, encouraging and enstomaking her to patience and tolerance, bidding her to hold in her breath as much as she may, also stroking gently with her hands her belly about the Navell, for that helpeth to depress the birth downward.



But this must the midwife above all things take heede of, that she compell not the woman to labour before the birth come forward, and shew it selfe. For before that time, all labour is in vaine, labour as much as yee list. And in this case many times it cometh to passe, that the party hath labored so sore before the time, that when she should labour indeed, her might and strength is spent before in vaine, so that shee is not now able to helpe her selfe, and that is a perillous case.



THE SIGNS OF FETAL DEATH

p141.

Signes then that the birth is dead in the Mothers Wombe, be these.

1. First, if the mothers brestes doe suddenly slake, as I touched before.
2. If it moove it selfe no more, being wont before to stirre.
3. If when the mother turneth her from the one side to the other, shee feele it falling from one side to the other like a dead weight.
4. If her belly and Navell begin to waxe cold, which before was wont to be temperately hot.
5. If any stinking and filthy humours flow from the Matrix and chiesly after some fell disease.

6. If the womans eyes were hollow, and that her colour change from white, to swarte and dunne colour, and that her eyes and nose ware astinied, and have not their right use, and her lips ware wanne.
7. If beneath the Navell and about the secret parts shee feele great throng and paine, the colour of her face changing into worse and worse, otherwise then it was wont to doe.
8. If she have appetite to eate such things which be against nature, and not wont to be eaten or drunken.
9. If she be in her sleepe vexed with vaine and terrible dreames.
10. If she be pained continually with the strangury, or that she inforce her selfe much to the stoole, and with all her power and yet cannot doe anything.
11. If her breath begin to stinke, the which thing lightly hap peneth two or three dayes after the byrth be dead.
12. If the hands be put into very warme water, and then layd on the womans belly, and the child stirre not, is a sign that it is dead.
13. Of all these signes now, the more that come together of them at one time and in one person, the surer may ye be that the byrth is dead, the which being once dead, all diligence must be had that it may be expelled out of the womans body.



Justine Siegemundin

THIS MOST celebrated of the German Midwives of the 18th century is often referred to as the "pious Justine" from the fact that in her works very frequent reference to the Deity is made. Under the portrait of the author, which appears as a frontispiece, we find these words, "An Gottes hilff und Seegen Geschickten Hand bewegen Ist all mein Tuhn gelegen"—"All my doing depends on God's help and blessing and on the skillful motions of my hands." A false diagnosis of pregnancy in her twenty-first year excited her interest in midwifery and from that time on she began to

study. From a small beginning she began to gain local fame as a midwife, both as a practitioner and as a consultant. Her first official position was that of midwife of the city of Liegnitz. After various instances in which her ability was recognized, she was made Court Mid-wife by Frederick III.

It became an early habit for Justine to take notes when attending cases and because of the useful information she thus gained,



Courtesy of the New York Academy of Medicine
JUSTINE SIEGEMUNDIN

she was importuned to publish these. She finally published a book at her own cost, in which she attempted to prove the necessity of a book which should be chiefly useful to those who most need instruction, viz., the midwives. The result was an obstetrical treatise which not only had a great influence in its time but stands as a remarkable record of the best obstetrical thought in Germany at that period.

The book is divided into two parts, the first being a discussion of difficult labors and their treatment, and the second a treatise on medicines. The arrangement of the text is rather unusual, being in the form of a conversation between two midwives named Justine and Christina. Certain beliefs held by the author give us some idea as to her knowledge and ability. She understood well the operation of version and gives explicit directions for its indications and performance. She comes to a decision that the pubic bones are not separated during labor. Abnormal presentations are dealt with at great length and many copper plate illustrations are used to reinforce the text. She recognises the dangers of hemorrhage in placenta previa and understands the management of prolapse of the cord. Siegemundin's book not only reflects a remarkable personality but one in whom the art of practical obstetrics was developed to an extraordinary degree.

THE COURSE OF LABOR*

Justine. "Every woman who conceives must have a uterus; besides this there is the vagina, which leads to it, and the cervix which the entrance to the womb in which the child is conceived, carried and retained until, unless a mishap occurs, it comes forth into the world. If a woman has pains and the cervix be not opened, and if the pains cannot be quieted, medicine must be given so that the foetus may be retained. When, however, the pains go on increasing and the cervix opens, this is a sign that the pains are true labor pains."

Christina. "What shall we do when a woman is in labor a whole day and the cervix be not opened?"

Justine. "This happens only in primiparae, and if the cervix dilates but slowly, two fingers should be inserted to hold the womb back, for it is in such slow cases that prolapsus of the uterus is wont to occur. Many unskilled women, not knowing the existence of the cervix, and not understanding how the child comes forth, fail to protect it from tearing during labor. That the cervix is so often not found is due to the fact that it frequently is situated pointing to the rectum."

* Robb, H. *The Works of Justine Siegemundin, the midwife. Johns Hopkins Hospital Bulletin 1894, No. 37. p. 4.*

R. C. Jeff. Lib.

Die Königl. Preußische und Chur-Brandenb.
Hof-Sieges-Süßer

Das ist...
**Ein höchst nöthiger Unterricht
von schweren und unrecht-stehenden Gebührten,**

In einem Gespräch vorgestellet,

Wie nemlich, durch Gottlichen Beystand, eine wohlunterrichtete Wehe-Mutter mit Verstand und geschickter Hand der gleichen verhüten, oder wanns Noth ist, das Kind wenden könnte;

Durch vieler Jahre Übung selbst erfahren und wahr befunden:

Dann aber

Gott zu Ehren und dem Rechtesten zu Nutz, auf gnädigst und einständiges Verlangen Durchlauchtigster und vieler hohen Standes Personen verbessert, : Mittel und mit denen dasselbe mehrheit, Nebst doppelter Vorrede, Kupfern und nöthigem Register zum Dienst besondert vor.

Justinen Siegemundin / gebohrner Wictrichin /
von Romstet aus Schlesien, im Deutschen Fürstenthum gehabt.

Berlin:

Zu finden bey Johann Andreas Rüdiger, 1723.

Courtesy of the New York Academy of Medicine

TITLE PAGE FROM THE WORKS OF JUSTINE SIEGEMUNDIN, THE MIDWIFE

Justine. "As long as danger does not threaten the mother there should be no question of the employment of the hook. If all midwives understood their business and made no mistakes at the beginning of the birth or in their methods of traction, the use of an instrument would never be required. I seldom have had to employ the hook if I have been summoned at the beginning of the labor, unless some complication, such

as hemorrhage or great exhaustion of the woman, necessitated its use. As a rule I have found gentle manipulation to be sufficient, where I have been called early. For such, manipulations and even turning are better both for the mother and the child than using the hook."

Christina. "Why, then, since you say that by manipulation you can always assist, have I seen you when called to a labor wait a day or more without doing anything, and finally employ the hook?"

Justine. "In each case I was called too late. When called too late I have been obliged to use the hook, but this I am unwilling to do unless I have waited to see perchance whether nature would bring about the birth."



Christina. "Some weeks before labor you made a diagnosis of an unfavorable presentation. How can this be done?"

Justine. "When the child is fully formed and lies still, the presentation will generally be favorable; but when they are moving and are small, they can take up various positions. As a rule, the natural position is taken up at least two months before labor. The unfavorable presentations then come about from the fact that the child moves right up to the time of labor. The appropriate opportunity must be seized when the child takes up a favorable position and the membranes must be ruptured. Unfavorable positions usually occur in the case of children who at no time in the second half of pregnancy have presented well."



Christina. "Can we reckon accurately the date and hour when a labor should take place?"

Justine. "No, God can confuse the wise so that no man can boast of his wisdom. (2) Some women have their catamenia once after they are pregnant. (3) Some do not have their catamenia and yet are not pregnant. (4) Some have no idea when they become pregnant. (5) Some have their catamenia up to the time of labor. And (6) even after the first quicken-

ing has been felt, no date for the labor can be assigned, because no one woman feels this before another. There are, however, some signs of an approaching labor. There is some difference in the later months in the condition of the os. In those who are wont to have easy labors the os becomes soft shortly the fifth month, and eight weeks before birth it begins to open a little. In those who have tedious labors it remains hard until the time of labor. There are women who believe themselves pregnant and are not so, and yet the abdomen is swollen. By internal examination in the last three months of gestation it is easier to make out the existence of the foetus than by external examination."



Francois Mauriceau · 1637-1709

"It is WITH reason" writes Naegele "that Mauriceau is called the oracle of the obstetricians of his century." But little is known of his early life but we do know that he received the fundamentals of his medical education at the Hotel Dieu. Subsequently he practised with great success in Paris and in 1668 published his important work on *The Diseases of Women in Pregnancy and Childbirth*. This work is divided into three books which are preceded by a description of the female generative organs. The first book concerns itself with the different conditions to be met with from the time of conception through pregnancy. The second book deals with labor, and the third treats of the puerperium and the diseases of the newborn. Mauriceau's influence was great not only in his own country but also in England where his work was translated by Hugh Chamberlen of forceps fame.

Chamberlen in 1673 tried to sell Mauriceau for 10,000 livres the family secret (i.e., the forceps), claiming by its means to deliver in but a few minutes even the most difficult cases of childbirth. Mauriceau placed at his disposal a rachitic dwarf, which Chamberlen, after several hours of effort, was unable to deliver. In spite of this failure, however, on Chamberlen's return to England he translated Mauriceau's work and in the preface we find these interesting words, "My father, brothers, and myself (though none else in Europe as I know) have by God's Blessing and our

own Industry attained to and long practised a way to deliver Women in this Case without Prejudice to them or their Infants. . . . I will now take leave to offer an apology for not publishing the Secret I mention to extract Children without Hooks, where other Artists use them, viz. there being my Father and two Brothers living, that practise this Art, I cannot esteem my own to dis-



Courtesy of the New York Academy of Medicine
FRANCOIS MAURICEAU (1637-1709)

pose of, nor publish it without injury to them; and I think I have not been unserviceable to my own country, altho' I do but inform them that the aforemention'd three Persons of our Family, and my Self, can serve them in these Extremities, with greater Safety than others."

Besides his 283 aphorisms, Mauriceau's contributions are chiefly seen in his principal work. Among other observations he corrects the erroneous opinion handed down by Hippocrates that a

seven months fetus is more likely to survive than one at eight months. Mauriceau also points out that the uterus is the active agent and the fetus the passive agent during labor. He also refutes Pare's contention that the pubic bones separate during labor, describes true and false labor pains and gives a good account of the signs indicative of approaching labor. Mauriceau recommends primary perineorraphy and speaks of a secondary operation at a later date. His constant reference to superstitions and their fallaciousness is also to be regarded as a noteworthy contribution.

NON-SEPARATION OF PUBIC BONES IN LABOR*

They who have no perfect knowledge of the parts of a woman's body, acquired by Anatomy, are contented to admire, and cannot (as they say) conceive how it is possible, that an infant so big, can pass in time of labour through the Vagina of the Woman so small; at which Galen and many other authors have much admired; many of whom are of opinion, that the woman's Os pubis is separated to enlarge the passage at that time, without which it would be impossible for the infant to have room enough to be born, and therefore women a little antiquated, suffer more in their first labours than others, because their Os pubis cannot be so easily separated, which often kills their children in the passage. Others are of the opinion, that it is the Os ilium which is disjointed from the Os sacrum to the same purpose; and say, both the one and other of them, that these bones thus separated at the hour of labour, are thereto by degrees a little before disposed by the slimy humours which flow forth from about the womb, and then mollify the cartilage, which at other times join them firmly. But these two opinions are so far from truth as reason; for anatomy convinceth us clearly, that the womb by no means toucheth these places, or doth mollify them by its humours; as also, that these bones are so joined by the cartilage, that it is very difficult to separate them with a knife, especially the Ilium from the Sacrum, and almost impossible in some elderly women, without great

Mauriceau F. *The Diseases of Women with Child and in Childbed*. Translated by Hugh Chamberlen, M.D. London, 1727.

violence, altho' Ambrose Parre (citing many witnesses then present at the thing) reports the history of a woman, in whom (having been hanged 14 days after she was brought to bed) he found, as he saith, the Os pubis separated in the middle the breadth of half a finger, and the Ossa ilia themselves disjointed from the Os Sacrum. I will not in this case accuse him of imposture, for I have too much respect for him, and esteem him too sincere for it; but I indeed believe that he was mistaken in this separation; for there is no likelihood, that being so at the time of her labour, it would remain so a fortnight at the breadth of half a finger, for then they should have been obliged to carry this woman to execution; for she would not have been able to have supported herself to climb the ladder of the Gibbet, and to keep herself on her legs, according to the custom of other Malefactors; because the body is only supported by the stability of these bones: Wherefore we must rather believe, as most probably, that such a disjunction and separation was caused either by the falling of this woman's corps from the high Gibbet to the ground after execution; or rather by some impetuous blow on that place, received from some hard or solid thing. If we examine well the different figure and structure of these bones, between a man and a woman's skeleton, we shall find a larger empty space and distance between these bones, much more considerable in women than men, and that to this purpose the least women have the bones of the Ischion more distant the one from the other, than the biggest men: They have all likewise the Os sacrum more outwards, and the Os Pubis flatter, which makes the passage from this capacity larger, and more able to give way to the child at the time of the labour; they have besides this, the bones Ilia much more turn'd outward, that the womb being impregnated, may have more room to be extended on the sides, and be more at ease supported by such a disposition as is here represented.

Fielding Ould . 1710-1789

A NATIVE of Galway, Ireland, Ould studied in Paris probably under Grégoire and settled in Dublin about 1736. In 1742 appeared "A Treatise in Midwifery in Three Parts by Fielding Ould, Man-Midwife." In 1748 the work was reprinted. The first



Fielding Ould
(1763)

FIELDING OULD (1710-1789)
From H. R. Spencer: *History of British Midwifery*.

part of the work is devoted to anatomy, a description of the fetus, and the conduct of normal labor. The second part deals with abnormal labors not requiring instrumental aid, and the third part deals with instrumental delivery. In 1759 Ould was appointed Master of the Rotunda Lying-In Hospital, succeeding Mosse, its founder and first Master. In the same year he received

a knighthood. Ould is said to have had a very extensive practice, particularly among the upper classes, and he continued to work actively until his death in 1789. The *Treatise* is especially important for its part in laying the foundations for the study of the mechanism of labor. Ould recognized for the first time that the head of the fetus in the process of its adaption to the birth canal and did not remain with its long axis at right angles to that of the shoulders but "turned its head towards one shoulder." A study of the *Treatise* reveals many practices that are thought to belong to more modern obstetrics. Ould used opium in prolonged labor, recommended immediate delivery of the second twin, allowed the placenta to be born by the expulsive efforts of the uterus, used episiotomy, employed the forceps and performed version.

THE MECHANISM OF LABOR*

This every practitioner in midwifry has in his power to be certain of; yet it may not be amiss to prove it to the reader, who has not as yet practiced, by plain reasoning: first, it is evident that the head from the os frontis to the occipitis, is of an oblong figure, being very flat on each side; secondly, that the body, taking in the shoulders, makes still a more oblong figure, crossing that of the head; so that supposing the woman on her back, the head coming into the world, is a kind of ellipsis in a vertical position; and the shoulders of the same form in an horizontal position: thirdly, that the pelvis is of an elliptical form, from one to the other hip. Now if the child presented with the face to the sacrum, the oblong figure of the head must cross that of the pelvis; and if it were possible that the head and pelvis could be formed to each other, so as to admit of its exit, it must of necessity, from what has been said above, acquire another form for the admission of the shoulders; which is very different from the constant uniformity in all the works of providence.

From what has been said, it is evident that when the child is turned, so as to have the chin on one shoulder, all the above objections are removed; for the head and shoulders are on a

* Ould, F. J. *Treatise in Midwifry*. Dublin, 1742.

parallel line, in respect of their shape, and at the same time, both answer the form of the passage from the pelvis.

For want of this knowledge, many labours prove dangerous and tedious, that might have been very successful, had they been committed to nature. For it is too common for Midwives, immediately on the eruption of the waters, to move the child's head to and fro, in order to facilitate its exit; and this jogging, may very easily alter the position of the head, so as to make it what is generally esteemed natural; hence the crown of the head, near the joining of the coronal and sagital sutures, are by the efforts of the mother, forced against the os pubis: when this happens, the women tell you, the head is fixed on the share bone, which in reality, is the intersection of two elipses, namely, the head and the passage from the pelvis; but the misery does not end here; for the repeated throws of the mothers, forcing the head against the pubis, at the point above-mentioned, pushes it so as to make the lambdoidal bone lie on the back, whereupon the face presents itself; the consequence whereof shall be mentioned in its proper place, when we treat of preternatural deliveries.

It is to be hoped that this opinion, being founded on theory, and confirmed by experience, will meet with few opponents; and without doubt, the due application of it will be of infinite use.



THE DELIVERY OF THE PLACENTA*

The child, as was said before, must be laid on the operator's lap, or on the bed, as far from the mother as the length of the funis will admit; which he must take in the right hand, about six finger's breadth from the pudendum, and roul it twice or thrice about his finger; then the first and second fingers of the left hand must be thrust into the vagina, by its direction; and the patient stopping her breath and forcing as if she were at stool, the naval-string must be gently pulled forward as the forces, the operator rather waiting for her expulsion of it, than being too desirous to extract it; for pulling

* Ould, F. *A Treatise in Midwifry*. Dublin, 1742.

the funis so as to extract the placenta forcibly, may probably cause a flooding; or perhaps break the naval-string whereby the placenta would be very difficultly brought forth; therefore let him just pull it sufficiently to make it incline forward still insisting on the patient's forcing down, which if she be not able to do of herself she must be compelled to it, by putting a finger into her throat, which will cause a pressure of the diaphragm, and the muscles of the belly, by her efforts to vomit; by these means it is commonly brought forth in about five minutes. When it comes away by expulsion, it always is whole, but it is subject to be broke, and part of it left in the womb, if any violence be used for its extraction.

Most authors give a strict charge to lose no time in the extraction of this extraneous body lest the orifice of the womb should contract and obstruct its passage; and for this reason they advise the introduction of the operator's hand into the matrix; and by insinuating the fingers between it and the placenta, to cause their separation, the manner of doing which, shall be presently described. This fear of the womb closing makes many operators too hasty, which often produces fatal accidents.

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Notwithstanding what has been said on this subject, it must be allowed that Mr. Deventer, whose authority has universal approbation, strenuously advises the constant extraction of this burthen by the introduction of the hand; and very much condemns the pulling it forth by the funis; therefore we must endeavour to remove his objections to this practice, which he allows to be the most general in all parts of the world.

First he says that immediately after the child comes forth, you may thrust not only the hand but the arm also into the womb, without giving any pain, the orifice being at this time sufficiently dilated; whereas if you try different means, as described by other authors, it will in the mean time, be so much contracted, that the hand cannot pass it without great

pain. Here I allow, that were there a necessity for putting the hand into the matrix, the orifice is at this time more dilated, than it would be in some time after; but our author is certainly mistaken in the most material part of his argument; for it is not the passing of the hand through the orifice of the womb, that gives the patient such great pain; but it is its passing through the bones that make the opening into the pelvis, which I may venture to say, never alters as to its size: this indeed does give very extraordinary pain, which is the chief reason why the operation should be avoided when there is not a necessity for it.



Ludwig Bandl · 1842-1892

It is to Bandl that we are particularly indebted for our conception of the clinical significance of the lower uterine segment. In 1875 he pointed out that when rupture of the uterus occurs the point of rupture is nearly always in the lower uterine segment. Bandl was the first to point out the upper active and the lower passive segments of the uterus and the relationship that they bear to one another when rupture is threatened or takes place. He was born November 1, 1842 at Himberg, Niederösterreich, studied under Hyrtl, Dumreicher and Braun at Vienna. In 1875 he was privat-dozent for obstetrics and gynecology and in 1880 a. o. Professor. In 1886 he was called to Prague as Professor. Besides the important work referred to above, Bandl wrote on urinary fistulae and diseases of the tubes, pelvic peritoneum and pelvic reticular tissue.

RUPTURE OF THE UTERUS*

Consequently I consider the *abnormal condition* of these cases is *not the enlarged uterus but the thinned out cervix*.

Therefore we inquire whether thinning or rarefaction of the cervix has been congenital, acquired during pregnancy, or developed during delivery. The first question refers only

* Bandl, Ludwig. *Ueber Ruptur der Gebärmutter und ihre Mechanik nach klinischen Beobachtungen*. Wien, 1875.

to primiparae who rarely present rupture of the uterus. In order to answer the last two questions I have compared section specimens from the cervix 48 hours after delivery of women who died with or without rupture of the uterus. I observed that just as *intra vitam* the vaginal portion of a primipara is generally more delicate, so the entire cervix is also weaker than that of a multipara. Correspondingly rupture is rare in primiparae and frequent in multiparae. Yet the differences are not very great. Table 1, fig. 1, represents the section of the largest cervix from a quadripara, and fig. 2 the section of the smallest cervix from a primipara; both women had been delivered of normal mature fetuses.

A comparison with cervix sections of women dying from spontaneous rupture shows the greatest differences with reference to length and thickness only; usually the cervix has gained in length what it has lost in thickness.

Table 1, fig. 3, represents the cervix section from a woman with a narrow pelvis. At our clinic she had previously been delivered twice of a viable fetus. After rupture she died. The fetus had not been expelled into the abdominal cavity and was immediately delivered by post mortem cesarean section. This case completely affirmed the correctness of my theory on the mechanism of the rupture (*cf* mechanism).

Table 1, figs. 4 & 5, are sections from the cervix of a woman on whom I performed craniotomy two years at the clinic. Version of the fetus in head presentation was done elsewhere and resulted in a rupture of the upper third of the cervix, although the abnormal proportions of the cervix were not far advanced.

Such a change in cervical proportions during pregnancy is rather improbable and would have been noticed long ago. Consequently the only possibility is that these changes developed during delivery. This is indeed true. I have gradually followed up the abnormal proportions of the cervix *intra vitam* resulting from spatial disproportions and report them herewith.

It seems to me unnecessary to assume for all of my cases a

predisposition of the tissue of the cervix, such as Duparcque and also Churchill think they must do in the case of older women.

After sufficiently long action a strong and healthy uterus can cause spontaneous rupture of the absolutely normal cervix, provided the latter has been rarefied up to a certain degree during delivery. I am satisfied that in all my cases the spontaneous rupture occurred because of spatial disproportions, developing subsequent rarefaction of the cervix only during delivery.

One point must be made plain! In most cases rupture occurs after extreme rarefaction of the cervix; but in rarer cases the rupture occurred apparently before the cervix had become extremely rarefied.

Why rupture occasionally occurs even with lesser rarefaction of the cervix, I cannot as yet prove, possibly the problem can be determined by microscopic studies. At the onset of rupture the wall probably shows only slight differences in thickness, so that a slight deviation from the original tissue "Anlage," or the recurrent effect of a force, or the *scar* from a previous injury can explain the rupture.

In 2 cases I observed that the tissue of the abnormally rarefied cervix was infiltrated by foci of small extravasations near the tear, which may account for the early onset of the rupture. I will not dispute this point. However, I consider it more probable that in the cervical wall smaller vessels can rupture whose "Anlage" has obviously not been designed to withstand the enormous dilatation of the cervix during spontaneous rupture. Thrombosis of the vessels, frequently observed at the margins of the tear, and the enlarged and ovaly elongated lumina of the veins, demonstrated on table 1, fig. 3, are apparently connected with the abnormal dilatation of the cervix and its surroundings.

Carl Siegmund Franz Crede · 1819-1892

"CREDE's method of expressing the placenta" and "Crede's prophylaxis of ophthalmia neonatorum" are procedures well known to the obstetrical world. The man whose name has become thus memorialized well deserves such recognition, for he was one of the illustrious leaders in obstetrics and gynecology of his century.



CARL SIEGMUND FRANZ CREDE (1819-1892)

Born in Berlin, December 23, 1819, Crede obtained his medical education at Berlin and Heidelberg, later becoming the assistant of Busch in the Berlin Maternity. In 1852, at the age of 33, he was appointed director of the Berlin School for Midwives and physician-in-chief of the lying-in division of the Charité. In 1856 he was called to Leipsic as Professor of Obstetrics and Gynecology, a position which he occupied for 32 years. He became famous, both as an investigator and as a teacher, and among his celebrated pupils were Fehling, Ahlfeld, Leopold and Sanger. In

1887, owing to ill health, he resigned his position at the university, devoting himself to editing the *Archiv für Gynakologie*, of which he was the founder. Among his many writings is a textbook for midwives, written in collaboration with Leopold, which went through at least five editions. His most noted contribution is undoubtedly that of the prophylaxis of ophthalmia neonatorum which, since its universal adoption, has unquestionably prevented blindness in many thousands of newborn. The accounts of Crede's life and achievements reveal a good deal of his inspiring personality of which his contemporaries so frequently speak. This is also well reflected in his writings.

THE PROPHYLACTIC TREATMENT OF OPHTHALMIA NEONATORUM*

In other words within a period of almost three years, there occurred in 1160 children only one or at the most two, cases of blennorrhea. Thus I had reached a percentage-figure which can be accepted as attainable, because individual illnesses, in which the blame must be placed on omission or a false execution of the prophylactic process, will never be able to be completely checked.

The same percentage has continued to hold good from the conclusion of my third report up to now (end of March 1884), thus for one more whole year.

Here again I expressly point out, that all the other usual eyesicknesses of children, which formerly could be observed rather frequently along with blennorrhea in the first days after birth, and which are slight and not dangerous but annoying nevertheless: such as: inflammation of the conjunctiva (Bindegaukatarrh), slight inflammation of the conjunctiva (Bindegauentzündung), chafing (Wundsein) of the outer skin, etc., have all as good as disappeared since the introduction of my prophylaxis.

So as to prevent any misunderstandings, I shall proceed to describe exactly how the process was used in the Leipzig Institute:

* Crede, C. S. F. *Die Verhütung der Augenentzündung bei Neugeborenen.* Berlin, 1884.

After the ligature and division of the umbilical cord we first removed from the children in the usual manner the sebaceous matter and the blood, mucus, etc., which clung to them; then they were brought to the bath and there, by means of a clean piece of cloth or better, by means of a clean Bruns' wadding for dressing not with the bath-water but with other clean, ordinary water, their eyes were cleansed on the outside: that is: all the sebaceous matter clinging to the eye-lids was removed. Then on the table where the child is swathed *before* clothes are put on the child, each eye is opened by means of two fingers, *a single drop of a 2 percent solution of silver nitrate hanging on a little glass rod* is brought close to the cornea until it touches it, and is dropped on the middle of it. *There is no further care given to the eyes.* Especially in the next 24 to 36 hours, in case a slight reddening or swelling of the lids with secretion of mucus should follow, the instillation *should not be repeated.*

The solution of silver nitrate is contained in a little bottle of dark glass with a glass stopper. The neck of the bottle is 1 centimeter in diameter. The little glass-rod used is 15 centimeters long, 3 millimeters thick, and smooth and rounded at both ends. The little bottle and rod are kept locked up in a small drawer in the swaddling-table.

The solution is renewed about every 6 weeks, but can even be used much longer, without damaging its effects. To introduce the process into the widest circle of activity possible, the apparatus used for it must be as simple, cheap, and safe as possible. That is why I have again given up the syringes, brushes, pipettes, drop-glasses which I used to use very often in treating already existing ophthalmic blennorrhreas, because they did not achieve the desired end as well as the little glass rod I have described.

Rinsing of the female genitalia is performed for the sake of cleanliness, but it can also be omitted, because it has no influence on the treatment of the infection, even if sterilized water or antiseptic solutions are chosen.

Naturally it is not a question of the series of operations

described above. In any case, the instillation does not have to be used before the ligature and division of the umbilical cord of the child takes place. In order not to lose control over those who are in labor during the third stage of labor, it is recommended for private practise, in case there is a lack of assistants who are familiar with the process, that first, immediately after the ligature and division of the umbilical cord, on the swaddling-table, the eyes be cleaned on the outside, then the instillation made immediately—a thing which takes only a few minutes—then the placenta be completely cared for, and finally the child bathed.

In the Leipzig lying-in Hospital, the instillations were made by the head-midwife alone, mostly without the supervision of a doctor; only one student-midwife can be useful to the extent that she delicately draws apart a little the child's eye-lids with one finger of her hand. By means of this assistance all the students are trained, and soon can carry out the process all by themselves.

CHAPTER THREE

THE PATHOLOGY OF PREGNANCY

FOREWORD

IT IS OBVIOUS that one of the major difficulties in compiling a work of this character is the selection of material to suit a necessary limitation of space. This problem was made fully manifest to the author in the preparation of the present chapter. There would appear to be no question as to the importance of the selections here presented. Channing has unquestionably been neglected by those who from time to time have surveyed the history of obstetrics in America. His importance as a contributor and leader of obstetric thought I have tried to emphasize elsewhere.* The remaining names are well recognised by competent authorities. The contributions of Rigby and Lever stand out as among the most important in the entire realm of Obstetrics.

* Thoms, H., *Chapters in American Obstetrics*, Springfield, Ill., 1933.

*Francois Mauriceau . 1637-1709*THE TREATMENT OF SYPHILIS DURING
PREGNANCY*

I know very well that many will not easily be persuaded, but that either it is impossible to cure a woman of the Pox whilst she is with Child, or that she and her Child cannot undergo the remedies without inevitable danger of death: However, the experience I have had of it myself, makes me to be of another opinion, which I am willing to communicate for an example in the like case. In the year 1660, when I practis'd Midwifery in the Hostel de Dieu at Paris, a young wench not above twenty years old, came thither to lie-in of her second child, that had had the Pox before ever she conceived the first time, and after miscarried of a dead child, rotten with the Pox; therefore being big this second time, and perceiving the accidents of her disease to augment more and more, she concluded there was no hopes this great-belly would succeed any better than the first, because she had all over her body, especially upon both her breasts, very many malignant ulcers, which encreased daily; and fearing it might turn to a Cancer before her reckoning was compleat, being but three Months gone, she resolved to submit to a thorough cure then, and to hazard her life in that condition to save her child's, having no other hopes to effect it, nor being able herself to resist the growing disease. She acquainted three or four chirurgeons both with her disease and design, not at all concealing her great-belly; who for that cause would not undertake her, (altho' she was fully resolved upon it, and promised to pay them well) telling her that their conscience would not suffer them to do it in the condition she was in, and that it would be better she would patiently submit to it as well as she could, till was brought to bed, and then they would very willingly undertake her: But when she found none would undertake her, unless she concealed her great-belly, which was not hard to be done, being

* Mauriceau F. *The Diseases of Women with Child and in Childbed.* London, 1727.

but 3 months gone, and believing there was no better an expedient; she met with another (to whom she mentioned nothing of her great-belly,) that put her into the ordinary course, as if there had been no conception; and besides the common remedies used in this disease, he gave her a Salivation by five or six reiterated frictions of the ointment, which followed her very plentifully five whole weeks, so that she was well and perfectly cured, without leaving the least ill accident behind of her disease. When she was almost recovered, and that all had succeeded well, she told her chirurgeon she was 4 months and a half gone with child, (for she was 3 months when she came to him, where she lodged six weeks intire, without having it in the least perceived) which at first he could hardly believe, but perceiving her belly rather grown bigger than less, during the evacuation the physick had made, he was immediately assured of the truth of it: She informed him, that the reason why she had concealed her great-belly, was the refusal four chirurgeons (to whom she confess it) made to take her in hand. From the time she was cured she suffered not the least inconvenience during the remainder of her time, except a little want, because all the money she had was given the chirurgeon for her cure, which made her come to the Hostel de Dieu to lie in, where I delivered her of a child at the full time, as big, fat and healthy, as if the Mother never had had the least touch of that disease in her whole body; and which was very remarkable, the burden (which is a part very susceptible of the least impression of a woman's corrupt humours) was as neat, fair and ruddy as could be imagined.



Edward Rigby . 1747-1821

EDWARD RIGBY was born in Chowbent, Lancashire on December 27, 1747. At an early age he came under the influence of Dr. Priestly as a pupil at the celebrated Warrington Academy and, when 14, he was apprenticed to Mr. Martineau, a surgeon at

Norwich. After his term of indenture, he went to London, where he completed his medical education and returned to Norwich to practise. It was while he was in the early years of practice that he wrote his *Essay on The Uterine Haemorrhage*. In this essay, published in 1775, we find a clear differentiation of premature separation of the normally implanted placenta which Rigby designated as accidental hemorrhage, from placenta previa which is called unavoidable hemorrhage. This remarkable essay was well appreciated by the author's contemporaries for it went through several editions and was translated into German and French. Rigby also wrote on other subjects including smallpox and inflammatory diseases. In 1789 he was admitted a member of the London Corporation of Surgeons and of the London Medical Society. Among his unpublished papers is an account of a visit to Paris during the time of the French Revolution. It was not until 1814, when he was 67 years of age, that he took his degree in medicine.

AN ESSAY ON THE UTERINE HAEMORRHAGE*

No circumstance that attends parturition, exposes women to so much danger, as profuse Haemorrhages from the Uterus, towards the latter end of pregnancy, and in the time of labor; the art of midwifery is likewise, in no instance, more at a loss in the use of means for the relief of the patient; an enquiry into the causes of them, and an attempt to improve the practice in such cases, cannot, therefore, be useless.



A knowledge of the true causes that produce floodings, will give us all the information, which I have considered as the first requisite towards an improvement in the practice; for though it has been little noticed by those who have written upon the subject, they certainly arise from two very different causes, which are very different in the danger they produce, and which require a very opposite method of treatment.

Floodings have, indeed, heretofore been considered as arising from two different causes, one alone of which was supposed

* Rigby E. *An Essay on The Uterine Haemorrhage, etc.* London, 1775.

dangerous; a distinction having been made, by some authors, between the discharge which came from the Vagina, and that which proceeded from the Uterus; and when it came from the Uterus, they also distinguished whether it came from the bottom or the orifice of the womb, by which was only meant, whether it was occasioned by a separation of the Placenta, or whether it was owing merely to a rupture of the vessels of the Vagina or Os Uteri, produced by the distension of labor: this distinction, to those who are the least conversant with practice, must appear trifling, as no bleeding of consequence enough to deserve consideration, ever comes from the latter; and that, which is the object of the present enquiry, always proceeds from the Uterus.

The separation of the Placenta from the Uterus, before the delivery of the child, and the consequent opening of its vessels, must, therefore, be looked upon as the proximate cause of every considerable discharge of blood from the womb at that time: but this premature separation of it may be produced by very different causes, and it is a knowledge of this difference that will, in my opinion, remove the difficulty of ascertaining the reason, why the same apparent complaint should, very often, so widely differ in its termination, and at the same time remove also the uncertainty of treating it.

There is no particular part of the Uterus, to which nature seems constantly and uniformly to fix the Placenta, it is nevertheless, for the most part, so situated, that if the woman be healthy, and no accident befall her, it does not separate till the full term of pregnancy, nor then before the entire expulsion of the child, after which it becomes disengaged from the Uterus, and is thrown off, making room for its entire contraction, which shutting up the mouths of the vessels, effectually prevents any considerable loss of blood; for which purpose, it is plain, it must be fixed to some part of the womb which does not dilate during labor, namely, to the fundus or sides of it.

In this case, then, when a flooding comes on before the delivery of the child, it is obvious, that the separation of the

Placenta must be owing to some accidental circumstance, to violence done to the Uterus by blows, or falls, to some peculiar laxity of the uterine vessels from badness of habit, or fever, or to the influence of the passions of the mind suddenly excited, such as fear, anger, &c.

But from the uncertainty, with which, (as before observed) nature fixes the Placenta to the Uterus, it may happen to be so situated, that when the full term of pregnancy is arrived, and labor begins, a flooding necessarily accompanies it, and without the intervention of any of the above accidental circumstances; that is, when it is fixed to the part of the womb which always dilates as labor advances, namely, the Collum and Os Uteri, in which case, it is very certain that the Placenta cannot, as before described, remain secure till the expulsion of the child, but must of necessity, be separated from it, in proportion as the Uterus opens, and, by that means, an Haemorrhage must unavoidably be produced.

That floodings, which arise from these two different causes, which I will distinguish by the names of accidental and unavoidable, though they may appear exactly similar in their first symptoms, should terminate very differently, if left to nature, assisted only by the palliating means before mentioned, cannot seem strange; nor can it be a doubt that of these two kinds of floodings, only one of them, namely, that which is produced by an accidental separation of the Placenta can be relieved by the use of these palliatives; and that the other, in which the Placenta is fixed to the Os Uteri, and the flooding is therefore unavoidable, cannot possibly be suppressed by any other method whatever, than the timely removal of the contents of the womb: for supposing the discharge to be for a while restrained by bleeding, medicine, cool air, &c. it will inevitably return when nature is so far recovered as again to bring on labor: in the first case, if the Haemorrhage have been checked by the use of the above means, it is not impossible but labor may come on, and the child be safely expelled by the natural pains, before it returns; or, if it should return, it may not increase in quantity; as in this case very probably, the separated part of the Placenta which occasions the discharge, remains

nearly the same; whereas, in the other case, in which the dilatation of the Os Uteri produces the separation of the Placenta, every return of pain must be a return of the bleeding, and it must become greater and greater, as the Uterus opens more and more, and the Placenta is in proportion detached, till it increases to a degree that exhausts the patient, and she dies before nature has been able to expell the child. That such must, inevitably, be the progress and event of floodings arising from such a cause, if left to nature, is too obvious to be further insisted on.

That this attachment of the Placenta to the Os Uteri, is much oftener a cause of floodings than authors and practitioners are aware of, I am from experience fully satisfied; and so far am I convinced of its frequent occurrence, that I am ready to believe that most, if not all, of those cases which require turning the child, are produced by this unfortunate original situation of it; and, moreover, (which is perhaps of as much practical importance to know,) when the Placenta is not so situated, the events of the annexed cases authorise me to say, that if the patient be properly managed, nature will, for the most part, terminate the labor safely, without any manual assistance of the surgeon. And, independent of the proofs which experience gives, it seems reasonable that in the latter case it should be so; for those who are much conversant with the difficult part of midwifery, must have observed, how much more nature is able to do for her own relief than is commonly imagined, and how, unexpectedly, she will sometimes effect, what art has been a long time in vain attempting; if we add to this, that when any dangerous circumstance affects the Uterus, nature ever makes some effort to remove it, need we be surprised, than in these cases, when the Placenta is not at the mouth of the womb, and there is, therefore, no impediment to its dilatation, and the expulsion of the child, she should, for the most part, safely effect both?



Marie Anne Victoire Boivin · 1773-1841

ALTHOUGH the condition known as hydatidiform mole was said to have been first described by von Grafenberg in 1565, it has been pointed out by Kussman that Aetius in the early part of the sixth century wrote intelligently about it. The chief credit for an understanding of the true nature of the disease belongs to Madame Boivin, one of the celebrated Paris midwives, who, in 1827, pointed out that it was of chorionic origin. Madame Boivin received her training at the Maternité, working with La Chapelle and Chausaier. In 1812 she published *Memorial de l'Art des Accouchemens* which went through several editions, including an Italian translation. She also contributed works on uterine bleeding, abortion, pelvimetry, caesarean section and diseases of the uterus and adnexae.

DESCRIPTION OF HYDATIDIFORM MOLE*

COROLLARIES OF THE PROPOSITIONS CONTAINED IN THE PRECEDING MEMOIR

3. These vesicles are the product of a degenerate conception.
4. Whatever some may say about them, these vesicles are the result of a pathological arrangement of the capillary vessels of the amnion, and of a particular disease of the chorion or the placenta.
6. Sometimes there are found the remains of the embryo or the foetus together with the hydatidiform mole.
7. The vesicular mole is not at all suspended in the uterus. The vesicles do not directly adhere to that organ; an intervening membrane analogous to the decidua serves as a means of union and communication between the uterus and the mole.
8. Girls and women living in a state of chastity are not and should not be subject to that condition.
9. This vascular growth depends upon a disease in the serous membranes covering the ovum.
10. For in the uterus there exists no other serous membrane

* Boivin Mme. V. *Nouvelles Recherches de la Mole Vesiculaire, etc.* Paris, 1827.

but those which have been deposited there as the effect of uterine conception.

11. The disease is capable of assuming different characters, but often it is presented in the vesicular form.
12. In all likelihood the external character of the mole depends on the elementary portion of the ovum which was primitively altered.

DIAGNOSIS

19. The rational signs of this type of pregnancy may be confused with those of foetal pregnancy.
20. Vesicular pregnancy takes place only in women who live in a state of marriage and who are likely to reproduce. It has been noticed in women from 20 to 46 years of age.
21. In this type of pregnancy the uterus is enlarged. However, by palpating it there is felt neither the movement of a free active body, nor the presence of fluid. The absence of these two certain signs of foetal pregnancy, the compactness of the bodies contained in the uterus, the rapidity of their growth are the least equivocal signs of a molar pregnancy.
22. The removal of some aqueous vesicles through the vagina is the only sure sign of a hydatid mole in the uterus, but in that case, the total expulsion is rarely slow in occurring.
23. The form, size and the situation of the uterus, present differences not only at different periods, but also at periods corresponding to the same kind of pregnancy.
24. The length of the cervix uteri, its direction, its situation, seem to depend on the period in which the hydatid pregnancy is found at the moment in which the organs are explored. The differences to be noted in the various relationships of the uterus depend also on the volume of the mass which it contains, not taking into account the duration of the pregnancy.
25. If one has not made sure of the size of the uterus, by palpating it several times instead of once, he will certainly confuse as has been said hydatid pregnancy with dropsy



Courtesy of The New York Academy of Medicine
MARIE ANNE VICTOIRE BOIVIN (1773-1841)

of the tubes and the ovaries. As could be seen in the case of Mme. Claire, the uterus is not always rounded out; it does not always occupy the middle region of the abdomen, and we have seen two cases of dropsy in the left ovary in which the organ affected adhered to the right side of the abdominal wall; and it was also on the right side that the tapping had been made.



John Charles Weaver Lever . 1811-1859

LEVER WAS born in Plumstead, England, September 28, 1811. He began the study of medicine as an apprentice to Mr. Butler of Woolwich and entered Guy's Hospital as a student in 1832. He passed his examination in 1834 and began to practice in Newington Causeway. He became very successful, particularly in obstetrical practice. In 1843 he received the Fothergillian medal for an essay on diseases of the uterus. In 1849 he was appointed Lecturer in Midwifery at Guy's Hospital. He was exceptionally popular as a lecturer. In 1843 he published his *Cases of Puerperal Convulsions with Remarks*. To him belongs the credit for the discovery of albumin in the urine of eclamptic women.

ALBUMIN IN THE URINE OF ECLAMPTIC WOMEN*

Condition of the Urine.—In the first four cases here recorded no mention is made of the condition of the urine, for our attention was not at that time directed to the investigation of this secretion. In the fifth case, Mr. Woolnough, my late colleague Mr. Tweedie, Dr. Gull, as well as myself, particularly noticed the great similarity that presented in her appearance and that of patients labouring under anasarca with the Morbus Brightii; and it was with this view that we proceeded to examine the condition of her urine.

At first, I was induced to believe that it was merely a case of pregnancy occurring in a woman affected with granular degeneration of the kidney; but as the traces of albumen became daily more faint, until they entirely disappeared on November 3, I was led to suppose that the albuminous condition of the urine depended upon some transient cause probably connected with the state of gestation itself.

To settle this point, I have carefully examined the urine in every case of puerperal convulsions that has since come under my notice, both in the Lying-in-Charity of Guy's Hospital and in private practice; and in every case, but one, the urine has been found to be albuminous at the time of the convul-

* Lever, J. C. W. *Cases of Puerperal Convulsions with Remarks. Guy's Hospital Reports, 1843*, London, 2. s. i.

sions. In the case (10) in which the albumen was wanting, inflammation of the membranes of the brain, with considerable effusion, was detected after death. I further have investigated the condition of the urine in upwards of fifty women, from whom the secretion has been drawn, during labour, by the catheter; great care being taken that none of the vaginal discharges were mixed with the fluid: and the result has been, *that in NO cases have I detected albumen, except in those in which there have been convulsions, or in which symptoms have presented themselves, and which are readily recognized as the precursors of puerperal fits.*

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From what I have seen in public and private practice, I am led to the conclusion, that cases of convulsions complicated with an albuminous condition of the urine are divisible into two forms: in the one, the urine is albuminous during pregnancy; and there are external evidences, as shewn in the oedema of the face, eyelids, hands, &c. In such cases, the convulsions will be more violent, and will last for a longer time after delivery. The urine also retains its albuminous properties for a longer period than in the second form, or that in which the urine becomes albuminous during the labour. In this variety, the urine contains less albumen; the fits are less violent; seldom re-appear after delivery has been completed; and if they do, it is in a milder form, unless complicated with some lesion of the brain. The urine, in this form, very speedily loses all traces of albumen after labour is completed. Mr. Robinson in his Monograph, has satisfactorily proved, that causes which induce congestion of the kidney by preventing or obstructing the return of blood through its veins, as abdominal tumors, &c., will produce renal congestion and albuminous urine: and I am of opinion, that the gravid condition of the uterus, by its pressure, prevents the return of the blood through the emulgent veins; and hence is the cause of the renal congestion, and the consequent albuminous condition of the urine. This opinion is supported

by the facts I have already adverted to; viz. that the urine was found to be albuminous only in those women who were affected by, or who had the premonitory symptoms of convulsions. The pressure of the gravid uterus is by no means uniform, as stated by some writers: this may be remarked in the difference in size and figure that females present in their several pregnancies. In some, the uterus is distended more at its posterior and lateral parts than at its anterior, and vice versa; and yet, in both, the contents of the uterus may be equally great.

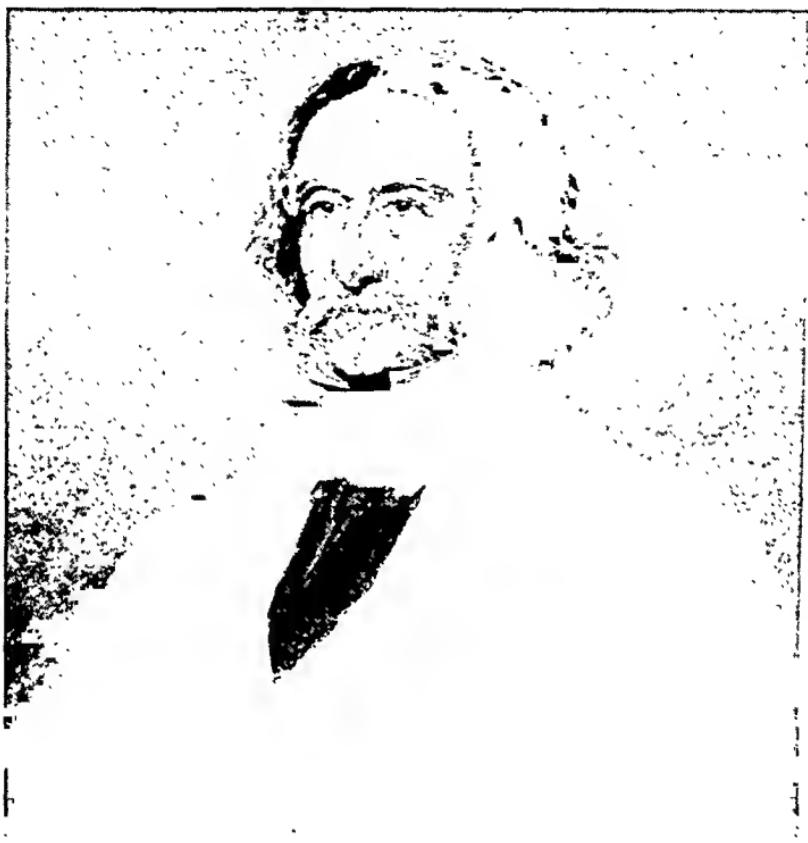
In these cases, the congestion will take place and the urine become albuminous towards the close of pregnancy: but this untoward pressure may not be excited until the onset of labour; and as this progresses, the congestion may be increased, and consequently the albuminous condition of the urine be caused. Thus, in my opinion, we have the same cause producing this condition of the urine both during pregnancy and parturition. The great similitude that exists in the appearances presented by females attacked with eclampsia, and those observed in persons affected with albuminuria, must have been oftentimes noticed by those who had attentively regarded both. In neither case do the convulsions strictly deserve the term "epileptic." Epilepsy is a chronic disease; while puerperal convulsions, and the convulsions which attend the progress of the *Morbus Brightii*, are of a clonic character.



Walter Channing . 1786-1876

THE FIRST description of the so-called pernicious anaemia of pregnancy was published in 1842 by Walter Channing. Channing's name is also important in the annals of American Obstetrics because of the leading part which he played in the introduction of anaesthesia in childbirth. His *Treatise on Etherization in Childbirth*, published in 1848, remains today not only a record of scientific achievement but a document of historical importance.

Channing was born in Newport, Rhode Island, April 15, 1786. Following a course at Harvard, he received his M.D. from the University of Pennsylvania in 1809. After a short period of study in Europe, he settled in Boston. At the first regular organization



WALTER CHANNING (1786-1876)
From Thoms' *Chapters in American Obstetrics*.

of the medical faculty connected with Harvard in 1816, he was elected Dean of that body. Three years later he was made Professor of Obstetrics and Medical Jurisprudence, a position which he held until 1854. In his essay on *Anhaemia*, here reproduced in part, his remarks concerning transfusion show almost prophetic vision.

NOTES ON ANHAEMIA,* ETC.

I pass now to a different class of cases. These have connection either with pregnancy, or the puerperal state. At least, they occurred during one of these states, or having begun in the first, the disease has continued into the second. As far as I have seen the disease in these connections, it has been always fatal. I have not seen in it, in any part of its course, any such change as would mislead any one acquainted with it, in regard to the result. I have heard of a case of recovery in a well marked example. I asked of the medical attendant what were its symptoms, and what had been its treatment. He had seen many of the cases of which I shall speak, and could make comparison of them with his. He said he could recollect nothing in the treatment of which he could speak, as having any special agency in bringing out the result. It was a well marked case—had been treated as others had been, and had recovered. He added that after a subsequent labor, anhaemia began to show itself, but which yielded to treatment. I shall not give cases in detail.



In this pathological inquiry I have purposely omitted, for distinct notice, a subject which gives to its principal interest; viz. the connection of anhaemia with the puerperal state. It will be seen that the greater number of cases occurred in this state, and that with the exception of two only, and to which reference merely is made, all of them have ended fatally. I do not recollect that any writer has treated of anhaemia in this connection. I have examined the latest and fullest systematic work, and which has a chapter devoted to anhaemia, but which has not an allusion to the puerperal state as leading to, or as having been complicated with it. The cases in this paper occurred in females, excepting a single instance. Among the women, only one was unmarried, and this

* Channing, W.—Art. I.—Notes on Anhaemia, principally in its connections with the Puerperal State, and with Functional Disease of the Uterus; with Cases. *The New England Quarterly Journal of Medicine and Surgery*, October, 1842, p. 157.

was fatal. In others, where the symptoms were well marked, but which were not puerperal, there was recovery. This state, then, deserves especial notice in our inquiry; most particularly does it so, when the great fatality of the disease at such a period is considered. In what the predisposition of such a state to such a malady consists, I know not. I can only say I have seen it pursue its unobstructed course in women recently confined, who have seemed the least liable to any disease either before delivery, by the occurrences of labor, or afterwards. Suppose no special predisposition to exist, may not the puerperal state itself, if not a cause, be an unfavorable condition for sustaining the disease should it occur from common causes, and so the mortality of such cases be in part explained? Or, may not the puerperal state lead to graver invasions of anhaemia, let its causes be what they may? It is the purpose of this paper to show that some connection subsists between the puerperal state and anhaemia, either as to predisposition, cause, or character and tendency of the malady, in order to lead to a more faithful study of the whole subject than it has received.

DIAGNOSIS

Anhaemia after delivery may be confronted with that state which follows immediately, or soon after uterine hemorrhage. In the first or immediate state, the surface may resemble anhaemia; while some of the symptoms of reaction are still more nearly like it. A very little observation will show that the color of the skin after hemorrhage, is wholly unlike the no color of anhaemia. The skin, in the first place, may be blanched; but you see at once that something of its natural hue remains. It is not red in any sense of the word, but in this circumstance alone does it look like that of anhaemia. There is complexion. Then again the face especially, and to this are these remarks confined, after hemorrhage, is sunken, wanting its natural expression; showing in the suddenness of the exhaustion, how sudden has been the action of the cause which has produced it.



PROGNOSIS

The character of this is easily to be gathered from what has been said in every page of this paper. The hourly and daily persistency of the same symptoms, with the as strongly marked failure of all the powers of life, and the unceasing progress to death which almost every case has made, tells us what the prognosis should be. The unfavorable character of this gets new force from this single and simple fact, that in the two cases of anhaemia which are reported to have recovered, there was no such change produced by any portion of the treatment, as authorized those who attended the cases to decide in any degree on what these recoveries depended.

TREATMENT

The last question does much to settle the questions which the treatment of anhaemia involves. The dissections which have been reported in this paper, and it would have been easy to have added to them, have thus far shed too little light on the nature of the disease to guide us in its treatment. These teach us how fatal a disease may be, the individual instances of which may have so strong a resemblance to each other as almost to seem to depend on some specific cause, and still leave no marks behind. The most which has been done by treatment, has been to attempt to answer the most obvious indications; and in the midst of universal physical prostration, with perfect mental vigor, to assist what power remains in sustaining the functions on which living depends. The question of transfusion has often occurred to me. But of what possible benefit would be such a supply of blood? What might not the effect be of filling almost empty vessels with a fluid so unlike that which already circulates in them, and which their own functions have produced? In a disease so fatal some risk might be incurred. But is transfusion an operation which our present knowledge of it would authorize? If safe in itself, however, might not time be gained by the operation, for such functional changes to occur as would supply healthful blood?



Alexandre Henri Pilliet · 1858-1895

ALTHOUGH certain cases of eclampsia were known to be associated with hemorrhagic hepatitis, as Jürgens and Klebs had pointed out in 1886, it is due to the contribution of Pilliet in 1888 that our attention was first directed to the characteristic hemorrhagic lesions. Pilliet's early education was under Pouchet, and he served for many years as preparer at the Laboratory of Comparative Anatomy of the Museum in Paris. He developed a technical skill in this work that afterwards played no small part in making him one of the foremost pathologists of his day. After interning in the various hospitals of Paris, he entered the laboratory of Tillaux and at the Dupuytren Museum he became conservator. Pilliet made many contributions to the Anatomical Society and the Society of Biology. He was known to his contemporaries as an indefatigable worker and an original observer of unusual merit. The latter part of his brief professional life is said to have been made unhappy by the medical politics of the time so that his biographer remarks "Pilliet had the soul of a savant who had wrongly strayed into medicine."

HEPATIC LESIONS IN PUERPERAL ECLAMPSIA*

It can be seen that it is a question of multiple hemorrhages around the portal system in an eclamptic woman who has presented no icterus. A certain number of similar cases are to be found, without however the exact designation of the seat of the hemorrhage, in Blot; hemorrhage of the liver in points the size of a grain of millet in a non-eclamptic albuminuric; in Molas; albuminuria, eclampsia, death during the delivery, cerebral and hepatic hemorrhage, and in observation V, albuminuria, general dropsy, eclampsia, subarachnoid hemorrhage, apoplectic nuclei in the lungs, hemorrhagic blotches of the liver. Vincent has recently reported a case of eclampsia without icterus with a meningeal hemorrhage in which the liver offered capillary hemorrhages in its breadth and on its surface, the kidneys, a slight nephritis.

In these cases, there exists together with the hemorrhages

* Pilliet, H. Lesions, Hepatiques de L'Eclampsie Puerperale. *Nouvelles Archives d'Obstet. et de Gynec.* 1888, No. 11, p. 506.

of the liver, cerebral hemorrhages; and in Germany, where they have had occasion to observe similar facts, they have tried to connect these two lesions from the point of view of their pathogenesis. Virchow, in a recent discussion, recalls the opinion put forward by Zenker: that the fat projected by the circulation in the lungs and the kidneys of eclamptics should come from the liver. In this connection, Jurgens expresses himself thus: "In all the cases of eclampsia of which I have made the autopsy, I have constantly found large hemorrhages of the liver which, in my opinion, play an important rôle in the pathology of *this state*; *their seat is in the peripheral zone*, and often they advance very much forward in the central zone; they extend between glandular lobules, and often they present a destruction of the hepatic parenchyma as a sequal. This blood that flows can easily be drawn and projected in every region of the body. To the naked eye there is nothing which suggests a septic infection; the laceration of the parenchyma and the interstitial effusions give a firm consistency, but there is no alteration in the parenchyma, except the large nuclei of former hemorrhages, which form infarcts. Often there can be seen under the capsule, red spots arranged like a geographical map, etc. . . . Microscopic examination of the blood of the right heart constantly shows hepatic cells, fat, and globules the contents of which are filled with fatty drops, etc. . . . In every case of eclampsia where there are fatty emboli, the latter come from the liver." Why is the hepatic gland the seat of the hemorrhage, and what is its process? Jurgens has found in it micro-organisms of an inconstant nature, and temporarily he rejects the hypothesis of the infectious nature of the eclampsia. On the other hand, let us recall that Doleris has found lesions of the liver related to acute yellow atrophy, and which were concluded to be an infection. We have seen how the examination of the sections in the absence of culture did not allow us to conclude in that manner. Moreover, the difficulties are known in the search for bacteria in the liver.

Outside of an alteration, of a bacterial cause, of the vessels

on the level with the portal-spaces, there remain two hypotheses: the first is the mechanical hypothesis, in which the hemorrhage is reduced: 1: to the efforts of the delivery, 2: to the fatty emboli of the liver following upon the trauma of the sub-peritoneal tissues during delivery; 3: the chemical hypothesis: i.e. the secretion of the disturbed and modified liver would give rise to destructive elements of the blood in the very interior of the gland. Thus, chloroform administered to eclamptics has been accused, but the hemorrhages are observed in cases where it has not been used.

There certainly exist some relationship between these hemorrhages of eclampsia and the sub-capsular hemorrhages that are seen in the acute yellow atrophy of the liver in pregnant women; and these analogies become striking if one considers that form of jaundice which is accompanied by convulsions and which constitute cholemic eclampsia. In a case of this latter form which we were able to see at Maternity Hospital, there existed abundant sub-capsular hemorrhages, and the hepatic parenchyma presented disintegrative lesions of acute yellow jaundice; but without hemorrhages around the portal spaces. So we can only indicate here the resemblances which exist between the two states, without trying to establish indefinite relationship between them.



James Matthews Duncan · 1826-1890

MATTHEWS DUNCAN is to be remembered as one of the great influences in scientific obstetrics during the first part of the latter half of the nineteenth century. Among his many important contributions one of the most notable was that of pointing out in 1879 that the pernicious vomiting of pregnancy may be associated with serious hepatic lesions, and it is a portion of this work that is herein transcribed. Matthews Duncan was born in Aberdeen in April, 1826 and graduated from Marischal College with the degree of M.A. when he was but 17 years of age. He received his

medical education in both Aberdeen and Edinburgh and graduated from the former as M.D. before he was 21. In the winter of 1846-47, he went to Paris where he studied in various hospitals. In the spring of the latter year, he returned to Edinburgh and became an assistant to James Y. Simpson, helping him in experiments upon anaesthetics. Two years later he began to practise in Edinburgh, chiefly as an obstetrician. In 1866 he published his *Fecundity, Fertility and Sterility*, the first scientific inquiry in English on those subjects. This work brought the author much fame both in Europe and America. In 1870 on the death of Simpson, Duncan became a candidate for his place but was not elected. In 1877 he was invited to accept the Lectureship in Obstetrics and the post of Obstetric Physician to St. Bartholomew's Hospital in London which he accepted. He was very successful here and in 1883 was elected a Fellow of the College of Physicians in London. In the same year he delivered the Gulstonian Lectures and was elected F.R.S. Matthews Duncan died September 1, 1890. Among his important writings are *Treatise on Paracentesis and Perimetritis*, 1869; *The Mortality of Childbed and Maternity Hospitals*, 1870; and *Sterility in Women*, 1884.

THE HEPATIC LESIONS IN PERNICIOUS VOMITING*

Now, if you look into the histories of fatal cases of vomiting in pregnancy, and fatal cases of a similar kind occurring just after pregnancy, in the puerperal state, you will find slight jaundice often mentioned; you will find, in many of them haemorrhages are mentioned as occurring; and a condition of lethargy, almost of coma, is described; and these statements seem to me to make it almost certain that the conditions causing death were the result of the aggravation of this physiological condition of granular degeneration that I have been referring to. In order that you may further see how liable observers were to fall into this error, I must tell you that cases of this disease occur without jaundice, or with very little, and without haemorrhage and without convulsions—that is, with-

* Duncan, J. M. On Hepatic Disease, etc. *Med. Times and Gazette*, 1879. vol. 1, p. 57.

out any of the ordinary grave symptoms of the fully developed disease. I am presently to describe a case. This concludes what I have to say about the dangerous and fatal cases of vomiting in pregnancy, and about the dangerous and fatal cases of a similar kind occurring in the puerperal state.



James Matthews Duncan

JAMES MATTHEWS DUNCAN (1826-1890)

But before I come to the special case of to-day's lecture, I must say a few words upon jaundice occurring in pregnancy. Ordinary jaundice rarely occurs in pregnancy—jaundice from obstruction, or from catarrh of the stomach and duodenum. I have seen pregnancy in a woman who had a chronic jaundice, and I have seen jaundice come on during pregnancy. In regard to this kind of jaundice there is very little to be said. You cannot mistake this disease. The name of the disease implies all that is necessary for its diagnosis. Anybody can tell

when a woman is jaundiced. It is not a mere tinting, but it is, as the disease you are all familiar with, quite easily recognised. This disease occurring in a pregnant woman does not make her very ill—at least, not more than it would if she were not pregnant; but the woman having it runs considerable risk of abortion or miscarriage. And, when this occurs, the abortion may be directly the result of the jaundice, the child being born alive, and, if the disease has not lasted long, untinted by the jaundice; or the jaundice may kill the foetus, and the abortion or miscarriage in that case may be a secondary result of the jaundice—the result of the death of the foetus not of the jaundice directly—and then the foetus and all the membranes are deeply tinted with the colouring matter of the bile. Now, in a case of this kind you may have to consider the importance of bringing on premature labour; but this should only be done if the disease is intense and long-continued, and if the child is alive. No doubt it is also worthy of your consideration whether you should not induce it in some severe cases, from the fear of the supervention of the *icterus gravis* as a consequence of the ordinary jaundice. It is impossible to lay down rules with regard to this last point, because cases have not yet sufficiently accumulated to form a basis of experience of such rules. I must therefore leave it in this undecided form. *Icterus gravis*, or the yellow atrophy of the liver, is a rare disease, and has only been well recognised within a generation or so, and I have no doubt that our increasing knowledge, of which I have tried to give you a sketch, will lead to its being found to be not so rare a disease as has hitherto been supposed. Especially will this arise from what is now known, that the essence of the disease may be there without the presence of all or even of any of its grand indications; and its grand indications are convulsions, jaundice, and haemorrhage. If uraemia from disease of the kidney occurs once in about every 500 women that are in advanced pregnancy or parturient, this disease certainly does not occur once in 10,000. The disease is called yellow atrophy of the liver. There may be no atrophy of the liver. The disease may prove fatal in an early stage, as in the case I shall read to you pres-

ently. The disease has been called cholaemic eclampsia, just as the corresponding disease of the kidneys is sometimes called uraemic eclampsia, from the frequency of the convulsions. But there may be no convulsions in either disease; and in the case I am to read to you there were no convulsions. Haemorrhage from the stomach or bowels or womb, or into the tissues, is a very characteristic phenomenon of the disease, and yet there may be none of it. In the case I am to read there were no haemorrhages. Lastly, the disease may be without jaundice; and generally, as in the case before us, the jaundice is slight. Here the jaundice got less as the woman got worse, instead of getting greater. The jaundice is not like that which you know familiarly as the common jaundice; it is a much slighter condition of tinting, and in the cases of *icterus gravis* I have seen, never has proceeded to be a deep yellow. The disease should not be called jaundice or *icterus* at all; it is a disease which affects the whole body, and whose best known manifestations are in the liver. There you have not only the parenchymatous degeneration of the hepatic cells, which I told you was a physiological condition in pregnancy and suckling, but further steps of degeneration, which this is not the place to describe, going on to complete fatty destruction of the hepatic cells. This, indeed, should be called, if we only know what the poison was, a case of poisoning, perhaps blood-poisoning. One German author ascribes the disease to poison from decomposition of the foetus, but for this view he advances no argument except the analogy of other poisons. Believing it to be a poison, he merely fixes upon this one, apparently without any reason. Now, as I go on I shall, I think, satisfy you that it is probably that instead of the dead and macerating foetus poisoning the mother, it is the mother's condition that poisons the child. A great author has also suggested that the disease is essentially uraemic; and, no doubt, the urea in the urine is very much diminished in this disease; but the disease is not at all like the ordinary uraemic eclampsia. Yet, it is true, parenchymatous degeneration of the kidney is found along and corresponding with parenchymatous degeneration of the liver.

CHAPTER FOUR

THE OPERATIONS OF OBSTETRICS

FOREWORD

THE PROGRESS of Obstetrics with the lowering of fetal and maternal mortality is strikingly manifest in reviewing the development of operative procedures as applied to obstetrics. The various operations which were formerly used to save the life of the mother by the destruction of the fetus in utero are almost unheard of in our day. However, the veritable armory of instruments for this purpose which have come down to us is a silent but forceful witness of the great prevalence of this procedure in former times.

Although caesarean section, both postmortem and on the living, was occasionally practised even centuries ago, the operation as we know it today is almost a twentieth century development. The rarity of this operation, at least in this country as late as the nineties, is witnessed by a survey of the literature of that period in which one finds the reports of single successful cases.

Our interest therefore in operative obstetrics up to 1900 is chiefly in podalic version and the forceps operation. With regard to these procedures it is probable that many of the 18th century obstetricians practised such operations with as much facility and skill as obtains today. Indeed, the short forceps as devised by Smellie have not been essentially improved upon. When obstetricians began to recognize the less severe pelvic contractions, it was logical that the induction of premature labor in these cases should follow.

The choice of the following selections is aimed to cover those operative procedures which have proved their usefulness by their importance in our present day operative treatment.

AN^o ETATIS

73
1585



HUMANAM + AMBROSII + VERE HÆC PICTURA + PARÆI EFFIGIAM SED
OPVS CONTINET AMBROSIAM

AMBROISE PARÉ (1510-1590)
From Major's *Classic Descriptions of Disease*

Ambroise Paré · 1510-1590

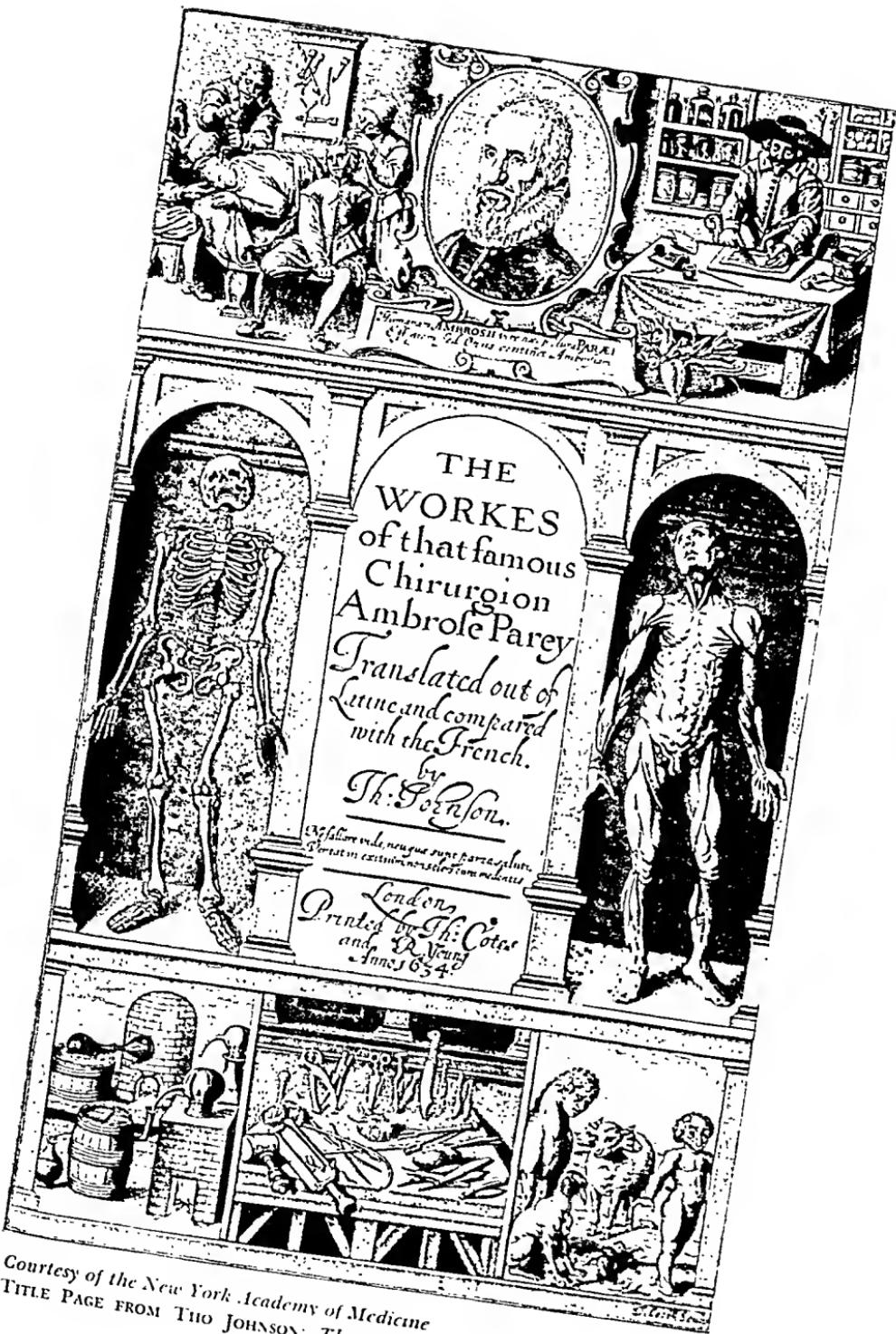
THE REINTRODUCTION of podalic version by Paré after many centuries of neglect places him as the master writer of the obstetric renaissance. Paré was an obstetrician as well as a great surgeon and was referred to by Smellie as "the famous restorer and improver of midwifery." The first of his obstetric treatises entitled "*La maniere de extraire les enfans tant mors que vivans hors le ventre de la mere, lorsque nature de soy ne peult venir a son effet*" appeared at the end of the *Briesve collection anatomique*, published in 1551. The second work "*De la Generation de l'homme receuilli des anciens et modernes*" was published as an octavo volume in 1573 under the title *Deux livres de chirurgie*. In the first edition of the complete works of Paré in 1575, this latter treatise was reproduced. The operation of podalic version had been practised in the time of Celsus, Soranus, and Philumenos but had been neglected by the Arabian physicians. Originality is not claimed by Paré, who states that he had seen the operation practised by Thierry de Hery and Nicole Lambert "Master barbers and surgeons in this town of Paris." In his treatise on the *Generation of Man* we find illustrated the birth chair of Rösslin and Rueff. In his writings also we find the recommendation of caesarean section on the living. It was following the lead of Paré that surgeons began to consider the practice of obstetrics not to be beneath their dignity and from that time men began more and more to encroach upon the functions of the midwife.

OF THE CHIRURGICAL EXTRACTIONS OF THE
CHILDE FROM THE WOMB EITHER
DEAD OR ALIVE*

Therefore first of all the air of the chamber must bee made temperate, and reduced unto a certain mediocritie, so that it may neither bee too hot nor too cold. Then shee must bee aptly placed, that is to say, overthwart the bed-side, with her

* Johnson, Tho. *The Workes of that Famous Chirurgion, Ambrose Parey*, London, 1649.

buttocks somewhat high, haveing a hard stuffed pillow or boulster under them, so that shee may bee in a mean figure of situation, neither fitting altogether upright, nor altogether lying along on her back; for so shee may rest quietly, and draw her breath with eas, neither shall the ligaments of the womb bee extended so as they would if shee lay upright on her back, her heels must bee drawn up close to her buttocks, and there bound with broad and soft linnen rowlers. The rowler must first com about her neck, and then cros-wise over her shoulders, and so to the feet, and there it must cross again, and so bee rowled about the legs thighs, and then it must bee brought up to the neck again, and there made fast, so that shee may not bee able to moov her self, even as one should be tied when he is to bee cut of the stone. But that shee may not bee wearied, or lest that her bodie should yeeld or sink down as the Chirurgian draweth the bodie of the infant from her, and so hinder the work, let him caus her feet to bee set against the side of the bed, and then let som of the standers by hold her fast by the legs and shoulders. Then that the air may not enter into the womb, and that the work may bee don with the more decencie, her privie parts and thighs must be covered with a warm double linnen cloth. Then must the Chirurgian, haveing his nails closely pared, and his rings (if hee wear anie) drawn off his fingers, and his arms naked, bare, and well annointed with oil, gently draw the flaps of the neck of the womb asunder, and then let him put his hand gently into the mouth of the womb, haveing first made it gentle and slipperie with much oil; and when his hand is in, let him finde out the form and situation of the childe, whether it bee one or two, or whether it bee a Mole or not. And when hee findeth that hee commeth naturally, with his head toward the mouth or orifice of the womb, hee must lift him up gently, and so turn him that his feet may come forwards, and when hee hath brought his feet forwards, hee must draw one of them gently out at the neck of the womb, and then hee must binde it with som broad and soft or silken band a little above the heel with an indifferent slick knot, and when hee hath so bound



Courtesy of the New York Academy of Medicine
TITLE PAGE FROM THO JOHNSON: *The Workes of that Far-
Ambridge Parey*

it, hee must put it up again into the womb, then he must put his hand in again, and finde out the other foot, and draw it also out of the womb, and when it is out of the womb, let him draw out the other again whereunto hee had before tied the one end of the band, and when hee hath them both out, let him join them both close together, and so by little and little let him draw all the whole bodie from the womb. Also other women or Midwives may help the endeavor of the Chirurgian, by pressing the patient's bellie with their hands downwards as the infant goeth out: and the woman herself by holding her breath, and closeing her mouth and nostrils, and by driveing her breath downwards with great violence, may verie much help the expulsion. I wish him to put back the foot into the womb again after hee hath tied it, becaus if that hee should permit it to remain in the neck of the womb, it would hinder the entrance of his hand when hee putteth it in to draw out the other. But if there bee two children in the womb at once, let the Chirurgian take heed lest that hee take not of either of them a leg, for by drawing them so, hee shall profit nothing at all, and yet exceedingly hurt the woman. Therefore that hee may not bee so deceived, when hee hath drawn out one foot and tied it, and put it up again, let him with his hand follow the band wherewithall the foot is tied, and so go unto the foot, and then to the groin of the childe and then from thence hee may soon finde out the other foot of the same childe: for if it should happen otherwise, hee might draw the legs and the thighs out; but it would com no further, neither is it meet that hee should com out with his arms along by his sides, or bee drawn out on that sort, but one of his arms must bee stretched out above his head, and the other down by his side, for otherwise the orifice of the womb when it were delivered of such a gross trunk, as it would bee when his bodie should bee drawn out with his arms along by his sides, would so shrink and draw it self when the bodie should com unto the neck, onely by the accord of nature requiring union, that it would strangle and kill the infant, so that it cannot bee drawn there-hence unless it bee

with a hook put under, or fastned under his chin, in his mouth, or in the hollowness of his eie. But if the infant lieth as if hee would com with his hands forwards, or if his hands bee forth alreadie, so that it may seem hee may bee drawn forth easily that way, yet it must not bee so don; for so his head would double backwards over his shoulders, to the great danger of his mother.



Scipione Mercurio · 1540-1616

THE FIRST of the Italian writers for midwives was Scipione Mercurio who was born at Rome and studied medicine at Bologna and Padua. Mercurio's interest for a time oscillated between theology and medicine and for a period he was an inmate of a Dominican monastery at Milan. After quitting the monastery, he travelled in France and Spain as physician to a German officer. Following this, he practised with great success in Padua and Milan, where he seems to have specialized in obstetrics. In Bologna he had studied under Arantius, whom he refers to as "the most learned anatomist of his time and my very kind preceptor." He also states that this anatomist had performed many dissections of gravid women. During the last fifteen years of Mercurio's life, he lived in Venice, where he died in 1615 or 1616. Mercurio's work entitled *La Commare o Riccoglitrice* was published in 1596. In this work we find the first mention of pelvic contraction as an indication for caesarean section. Indeed, the author is the first to have introduced the operation into Italy and to have published the first illustration of the operation. *La Commare* also contains an illustration and a description of the position which Walcher described in 1889. Bimanual version is also described by Mercurio.

La Commare is divided into three books, the first dealing with natural labor, care of the pregnant woman and of the new born child. The second book takes up abnormal presentations and their management, and the third section deals with various maladies which may occur to the parturient woman and the new born



Courtesy of The New York Academy of Medicine

TITLE PAGE FROM *La Commare*
Venice: Giotti, 1601

child. Herbert Spencer states that the first edition was published in 1596, the second and third books being dated 1595, and Fassbender says that there were 17 editions of the work.

Other works of this author include *The Catholic Courier*, *The French Disease*, *Comments on Tasso's Seven Days of the Creation of the World*, *The Clock of Health*, *On the First Part of the Aphorisms of Hippocrates*, and *On the Popular Errors of Italy*.

HOW TO PERFORM CAESAREAN SECTION*

Not every surgeon is fitted to effect Caesarean delivery; but the one who (is so fitted is a surgeon who) has had experience, is brave, is prudent, and above everything else is a skilled anatomist—in order that he may know how far he must penetrate with the blade, and that he may learn to recognise the limits of the omentum, the peritoneum, the location of the rectus muscles, and to discern the body of the uterus. This is certainly the great difficulty of the present operation, since the art of surgery is so greatly ill-used and almost at the mercy of barbers, that never in its existence was it in a worse state. Now when the practising physician or surgeon is found, before he puts hand to the work he must diligently consider whether there is another way of delivering the child beside this, because if there were such a way (the Caesarean section) may be omitted, in order to distress the patient less. But when he decides that there is no other possible remedy, let him consider whether the woman's strength is sufficient to stand such an operation; he can tell that from two things, the pulse, and the pain that she will have had in parturition. Therefore if she has suffered malpractice at the hands of some imprudent midwife or of some unskilled surgeon, as is wont to befall her many times, and also if she has a weak pulse, one must with justifiable excuses withdraw from the aforementioned undertaking; because, if perchance the parturient woman should die during the operation, even though she should die from the pain endured, all the blame would fall on the operation and not on the other. But if the

* *La Commare*, Venice: Giotti. 1601, chapter 29, book two.

woman is strong, with her pulse in order, when (the surgeon) has first taken courage and then has encouraged her, and when he has invoked Divine Favour for himself and for her, he will first prepare the instruments suitable for performing this section, namely, a razor which is very pointed and as sharp as possible, another with the extremity round but very sharp, similar to the one used by barbers, and a needle which has a very sharp triangular point and which is fitted with very smooth waxed thread; all these tools will be put in a place where they cannot be seen by the patient, in order not to frighten her. Let [the surgeon] have in addition a very soft sponge, many fine pieces of old linen folded many times in order to make use of them as will be described. Furthermore, let there be prepared several pieces, either clean or dirty, to be folded up and placed under the patient, bandages, threads [of] well combed bards of flax, and many slender white pieces the length of half an arm, to be used if necessary, as will be pointed out. But take care that before this operation the midwife arranges the evacuation of the patient's body, particularly the urine, so that by emptying the bladder it will remain lower down; but even if it were full and even if the incision had to be made to the left, where the aforesaid bladder is located, it would in no wise hinder this operation, remaining very low by its location and remaining greatly compressed by the weight of the full uterus. When the [patient's] body has been cared for, the surgeon may choose two positions to be occupied by the patient: one, if she is strong and courageous; the other, if she is weak or afraid. If she is strong, let her be propped up so that she sits upon the edge of the bed in this way: the legs hang down low, and the feet touch the ground, and she remains supine with the abdomen turned upward, and she has two or three cushions under her shoulders and under her head. As assistants let there be three young men or young women who are strong and courageous, two of whom hold the arms and the shoulders, and the other of whom, placed between the knees, pinions the thighs and holds them firmly. Let them remain silent, but be ready to

C Sito primo necessario al parto Cesareo , nel quale si debbon collocare quelle grauide, che non possono hauere i figlou se non col taglio : ma però quelle solamente, che sono gliarde.



Courtesy of the New York Academy of Medicine

ILLUSTRATION FROM *La Commare* DEPICTING CAESAREAN SECTION

perform their task. Let there be two or three more [assistants] to reach the surgeon what he asks for without delay. But if the patient is weak, let her be placed in such a position that she sits upon the bed, but let her be half reclined, which can be arranged with cushions, as said above; and this position is best to prevent women who fear blood from fainting. When this is done let the surgeon prepare to make the incision; but first let him consider which of two sides to choose: for if perchance, as is wont to happen, the woman should suffer from hardness of the liver or spleen, it is always necessary to avoid these obstacles in this way—if there is induration of the spleen, let the left side alone and make the incision in the right side; and if there is scirrhosis of the liver let the right side alone and cut on the left. After such consideration he uses good ink to mark the place to be cut in a straight line, situating it between the umbilicus and the flank just above the rectus muscle which is contiguous with the umbilicus the breadth of three or four fingers above the groin toward the os pubis, drawing the line according to the straightness of the muscle. In addition one makes three, four, or five small lines running crosswise over the straight line, in order to show where the stitches must be taken when one wishes to sew up [the abdomen]; it is better to make this line and incision a little higher up, in order to avoid a great effusion of blood, which is not the case when placed very low. Now, the site having been marked in this way, the surgeon by the name of Signore Iddio [Mr. God], cuts along the line that he marked with ink, reaching the deep fat of the abdomen by the incision, and making the incision about half a foot long, a little more or a little less, depending on whether the patient is bigger or smaller. When this first incision is made he sees the body of the rectus muscle and he cuts it until he reaches the peritoneum; when the latter is opened one sees the uterus, which likewise must be cut, but lightly, so as not to injure the child: in cutting it one takes care to begin the incision in the upper part and make it run crosswise in order not to cut its [the child's] testicles, and the epididymides, and spermatic

vessels. When that has been done successfully the child is taken out at once, together with the afterbirth. Afterward let there be in readiness (but prepared before this operation) the decoction of artemisia, agrimony, betony, mallow, leaves or flowers of pomegranate, and dried roses on the one hand, and on the other hand birthwort, sedge, and sweet-smelling bulrushes; this decoction is made in sour black wine, using enough to consume two pounds; it is then strained and to the filtrate are added two pounds of that water which blacksmiths use to extinguish glowing irons; it is then boiled again, and in it is dipped that folded cloth of which I spoke above; and when it has been so moistened the incision is fomented several times, because such a decoction has the property of stopping the flow of copious blood and strengthens the part. Then, with the sponge, in this way cleanse the uterus, inside and out, of the blood scattered about, as well as possible. When this is done the uterus will at once return to place, and let the surgeon prepare to sew up the abdomen; to do that he needs the help of another person, who, while he [the surgeon] inserts the needle, uses his finger to compress the intestines, which will appear close by if the uterus is small; be careful always to keep the wound covered with doubled warm cloths dipped in the aforementioned decoction, so that no excessive cold or air may penetrate into the intestines. The abdomen is sewed up with few stitches, like other sutures performed in any part of the body. The medical treatment that it receives following the operation is the same as for other wounds, namely, digestive remedies, purges, and consolidants; but the perfect cicatrisation of the injured uterus requires two remedies, one being the use of a tent made of old and very fine pieces, the size of the little finger, called by physicians a pessary, which must be anointed with complete rose oil, with the yolk of an egg, and must be placed in the pudenda, well to the front, three times a day in summer and two times a day in winter. The other remedy is to send enemas into the matrix; they are sent with small syringes made expressly to purge the matrix and to heal it and to strengthen

it; and these are given with the decoction of artemisia, agrimony, wormwood, althea, plantain, red roses, flower of tree mallow, catnip, and root of birthwort for one kind, and for another kind sedge and sweet-smelling bulrushes; everything is boiled in lots of sour wine, and such enemas are always given before the pessary is inserted, with the tepid decoction described. The patient must live very quietly, as is customary in every wound of importance, and eschew the use of wine at least for a fortnight, lest it produce inflammation; and the woman must keep indoors, where air does not harm her, and in short let her govern herself with as much diligence as would be occasioned by a body whose abdomen had suffered a mortal injury. This is enough about this new method of aiding difficult deliveries to help miserable patients.



William Giffard . . . -1731

WILLIAM GIFFARD, a surgeon and man-midwife, died in the year 1731. After his death Edward Hody, a Fellow of the Royal Society, published Giffard's *Cases in Midwifery*. In the preface Hody states that it is "an accurate and impartial account of the Deliveries of Two Hundred and twenty-five Women, which for the most part were attended with a great deal of danger and difficulty." He further says of Giffard that "He was a plain Man, remarkable for honest, frank Behaviour, his judgement was strong and unprejudic'd . . . he had acquir'd by his extensive charity to the Poor (whom he was ever ready to assist) the love and esteem of all that employ'd him." To Giffard is given the credit for the earliest record of the use of the forceps, called by him an extractor and which is recorded in Case XIV on April 8, 1726. Giffard's work is of interest not only for his early use of the forceps but also because of his description of a method for delivering the head which is essentially that described by Smellie at a later date. In placenta previa, Giffard employed podalic version and, as opposed to Deventer, he recognised that the condition

was an abnormal placental insertion and not, as Deventer believed, a separation from its attachment at the fundus.

Opposite the first page of Giffard's work is a plate representing "Mr. Giffard's Extractor" and "The Extractor as Improved by Mr. Freke, Surgeon to St. Bartholomew's Hospital." It is probable that the drawing of the latter forceps was inserted by the editor, Mr. Hody.

In considering Giffard and his work, I am quite in agreement with Partridge, who, in his *essay* on *The History of the Obstetric Forceps*, writes "From this survey of facts as arrived from the original sources, it is clear that Giffard was the altruistic and honorable physician who should receive full credit for introducing the forceps into common use in England."

THE INTRODUCTION OF THE OBSTETRICAL FORCEPS* CASE XIII

A Child with the Body in the World, but Sticking at the Head

April the 6th, 1726 I was desired to go to a woman the wife of a cabinet-maker, where when I came, the midwife told me that the whole body was in the world, and that it stuck at the head. I thereupon (well knowing the danger the child must be in, being so confined, and that it would, if it was not already, be very soon choaked) immediately endeavoured to extricate the head, which I soon accomplished after this manner. I clapped one hand flat upon the breast, and with the other taking hold above the shoulders, drew towards me, but the head did not readily follow: I therefore passed my fingers up to the child's mouth, supporting the breast with my wrist and arm, and putting one finger into the mouth, and two others upon the cheeks, I pulled towards me, and at the same time drawing with my other hand above the shoulders, brought out the head. The child was born alive, but died soon after. Upon examining the body I found the skull

* *Cases in Midwifry (sic).* Written by the late Mr. William Giffard, Surgeon and Man-midwife. Revis'd and Publish'd by Edward Hody, M.D. and Fellow of the Royal Society. London, 1734.

scarcely ossified in any part, and so tender that it seemed to be more like parchment than bone, for it gave way upon the least pressure; the occiput was as soft as the other parts, and the sutures were very open and far distant from one another; the thighs were very short, and the tibia bending very much outwards, both the feet were turned inwards and upwards, so that the ankles (had the child been placed upright) would have first touched the ground; both the upper and lower parts of each arm were very short and thick, and the flesh lying in great wrinkles as well in the arms as in the thighs and legs.

CASE XXIII

A Child Coming Right, but Sticking in the Passage, and the Placenta Adhering

June the 28th, 1728. I was called upon to go to see a poor woman in labour: the midwife told me the pains were short, with long intervals. I felt her pulse, which was regular and strong, and upon touching her, found the child to present its head, but high: whereupon I advised patience, ordering a clyster and a cordial hypnotick draught after it, the latter to be repeated in eight hours, if the child did not advance and her pains increase: the first not answering, they, agreeably to my directions, repeated the draught in the evening: between three and four o'clock the next morning I was sent for again; I then found the child but little advanced, her pulse very quick and labouring, and the womb very much spread, so that I could entirely pass my fingers round the head to the ears, for it was no ways engaged, but loose; the vagina was large, she having had seven or eight children before; wherefore considering that her pulse grew languid, and that her strength decreased, I thought it advisable to attempt her delivery. I endeavoured to press the child back, that I might be able to turn it and get the feet; but it was so locked at the shoulders, I was not able to move it; whereupon I passed my extractor and drew it with much difficulty fowards toward the labia, and then taking hold of the head on each side with

my hands (which cannot be done whilst it lies in the vagina) I drew the shoulders out; the other parts readily followed. A ligature being made upon the umbilical vessels, I cut them, and passed one hand into the womb, and at the same time twisting the string about the two fingers of my other, I found the placenta adhering to the uterus, which I gently divided

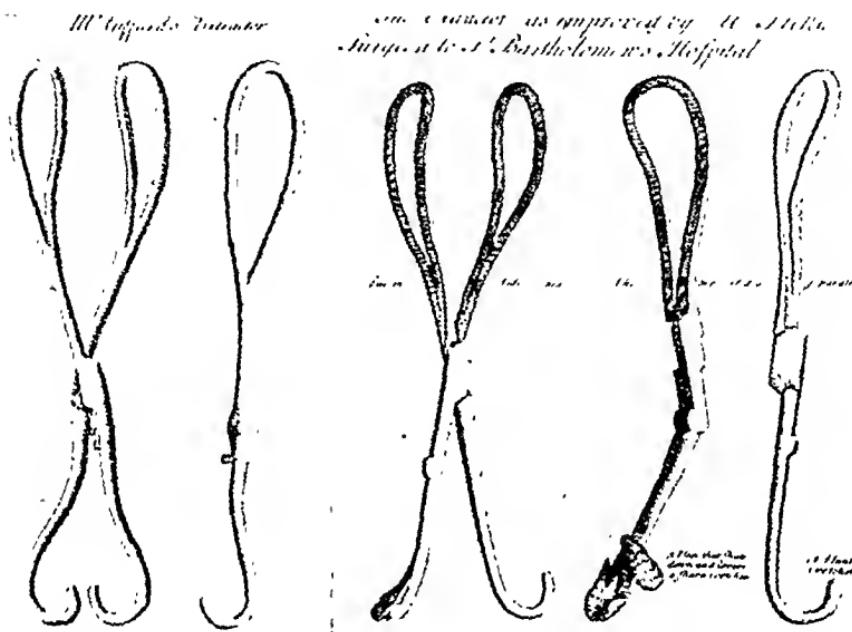


ILLUSTRATION FROM GIFFARD'S WORK, SHOWING GIFFARD'S "EXTRACTORS"

with the ends of my fingers, and drew it out. The child was born alive.

This case proves, that a child presenting right, but sticking in the passage, may be brought alive (I won't say always) without either the use of hooks, or lessening the head, contrary to the opinion of most former writers.

CASE CCXXIV

A Flooding

October the 13th, 1731, I was about eleven o'clock at night desired by a house-painter in York-Buildings, to go with

him to his wife, who he was afraid would be dead before I could get to her: upon my arrival I was informed by the midwife, that for some days before she had been seized with a flooding, but that it had not been violent; for about an hour or more before I was sent for, many and large clots of blood came away, and there was almost continually a dribbling, so that she had fainted away once or twice, which had very much alarm'd them: the midwife likewise observed, upon touching, that the os internum was somewhat dilated, which dilatation was greater after two or three good throws, but having only passed up one or two fingers, she could not feel any part of the child. I therefore first felt her pulse, which I found weak and low, and her spirits very much dejected, and upon touching, I found the vagina choak'd up with coagulated blood, and upon passing in my whole Hand, I observed that the os internum was dilated wide enough to admit the ends of my four fingers, and clods of blood stopping up the same; which being removed, I think found part of the placenta presenting first, and therefore gave it as my opinion that her delivery ought to be hastened, fearing, if the flooding continued, she would be so much reduced that she would not be able to assist with her throws, should they come on; or that her blood, the fountain of life, being exhausted, she would die before the child could be born by a natural delivery; to which opinion the midwife, one Mrs. Sexton, a good sensible woman, entirely agreed: The husband and others that were present leaving it wholly to my conduct, I immediately set about my work, and passing the ends of my four fingers into the os internum, I endeavoured to dilate it by separating them one from the other, and so soon made way to get in my thumb, and presently after my whole hand, which being pass'd through the os internum, I felt part of the placenta adhering round about it. I beg leave before I proceed to give any further account of the delivery, to give my opinion in a point of midwifry, in which I differ from most authors that have wrote on that subject. It is generally believ'd, that the ovum, after it's impreg-

nation and separation from the ovary, and it's passing through the tuba fallopiana, always adheres and is fix'd after some time to the fundus uteri; in this case the placenta adhered, and was fixed close and round about the cervix uteri, as I have found it in many other cases; so that upon a dilatation of the os uteri, a separation has always followed, and hence a flooding naturally ensues. It has been observed, that the ovum, if it is stopped in the tuba fallopiana, and does not readily pass through, will sometimes adhere to the tube, (though 'tis very rarely it so happens) and there make it's nidus, and a foetus will be formed there; of which I have given an instance, where a foetus was formed and contained several months in a sacculus out of the womb, so likewise if the ovum passes through the tube, and falls into the womb, it may adhere to the sides of it, or near it's neck, as well as to the bottom; but most commonly it is fixed at the bottom of the womb, as being the part where the blood-vessels are largest and most plentiful, whereby the foetus must of consequence receive most nourishment. But to return: when I had passed my whole hand into the uterus, I found the placenta adhering all round the os internum, so that I was forced to separate it on one side to reach the membranes, which I tore, and passing my hand within them, I searched for the feet, which I soon met with, and drew both out beyond the os internum, but in bringing them through the vagina, one flipp'd from between my fingers; the other I brought out, and then pass'd up my hand by it to endeavour to bring down the leg that had flipp'd from me, but it was drawn up so far I could not readily come at it: wherefore I took hold of that leg which I had fetch'd out, and endeavoured, by gently pulling, to bring down the hips; but as they were stopp'd above by the os internum, which was not sufficiently dilated to admit their passing through, I therefore passed up my fingers between the os internum and the hips, and so dilated it; and at the same time gently pulling the leg, I thereby soon made way for the hips to pass, and as the belly of the child lay to-

wards the os pubis of the mother, I gently turned it as I drew the body forwards; when I had brought the child almost out to the shoulders, I found that it stuck above, so I passed up my hand and brought down one arm, and then clapping one hand, as usual, to the breast, and the other behind over the shoulders, I endeavoured to draw out the head, but finding it stuck tight, I judged that the os internum was not sufficiently dilated, and thereby obstructed its passage: I therefore once more passed up the fingers of one hand, and found the os internum closely girt about the head near the ears; wherefore I endeavoured to dilate it, by passing in the ends of my fingers between it and the head, and so to push it over the head; by which method, and putting two fingers into the child's mouth, and pressing upon the lower jaw, whilst I pulled with my other hand at the shoulders, I drew the face forward, and the head soon followed. Upon passing my hand to fetch the placenta, I found it wholly loosened from the uterus, so that it readily came out. The child was dead, which was occasioned by the separation of the placenta.



Francois Mauriceau . 1637-1709

PRIMARY PERINEORRHAPHY*

But sometimes it happens by an unlucky and deplorable accident, that the Perinaeum is rent, so that the privy and fundament is all in one. If it were so let alone without Reunion, the woman afterwards happening to be with child, would indeed be deliver'd with more ease, and without danger of suffering the same again, as is usual when heal'd after such an accident; but if it remains in this manner, 'tis so great an inconvenience, that her ordure comes both ways.

* Mauriceau, F. *The Diseases of Women with Child and in Childbed.* London, 1727.

Wherefore having cleans'd the womb from such excrements as may be there, with red wine, let it be strongly stitch'd together with three or four stitches or more, according to the length of the separation, and taking at each stitch good hold of the flesh, that so it may not break out; and then dress it with an agglutinative balm, such as is Linimentum Arcae, or the like, clapping a plaister on, and some linen above it, to prevent as much as may be the falling of the urine and other excrements upon it, because their acrimony would make it smart, and put it to pain: and, that these parts may close together with more ease, let the woman keep her thighs close together, without the least spreading, until the cure be perfected. But if afterwards she happen to be with child, she will be oblig'd, to prevent the like mischief, to anoint those parts with emollient oils and ointments; and when she is in labour, she must forbear helping her throws too strongly at once, but leave nature to perform it by degrees, together with the help of a Midwife well instructed in her art, who being warn'd by the first disgrace, will do her best to avoid a second: for usually when these parts have been once rent, it is very difficult to prevent the like in the following travail, because the scar there made doth straiten the parts yet more: wherefore it were to be wish'd, for greater security against the like accident, that the woman should have no more children.

Now, if by neglecting such a rent, the lips of it be cicatriz'd, and the cure be then desir'd, you must with a good pair of scissers cut off those scars in the same manner as is done in a Hare-Lip; and it must afterwards be drest accordingly, or as if it newly happen'd.



Andre Levret · 1703-1780

ANDRE LEVRET-was born in Paris in 1703. Early in his medical career he had the good fortune to secure the confidence of Samuel Bernard, a wealthy man who became a sort of patron, and who on his death left Levret a sum equivalent to \$20,000 and an annuity. This financial aid gave Levret the opportunity of following his chief medical interest, which was obstetrics. In a short time he gained such a reputation that pupils came to him from all over Europe. Among his distinguished patients was the Dauphiness, mother of Louis XVI. Not only obstetrics but surgery claimed his attention and he was elected a member of the Royal Academy of Surgery of Paris. His chief contribution to obstetrics, of which they were many, was the introduction of the pelvic or maternal curve of the forceps blades. This innovation he announced to the Academy of Sciences on January 7, 1747. Levret not only introduced this curve but made the blades more hollow so that the instrument could be applied more closely to fetal head and thus prevent slipping. Levret also invented a crochet and an instrument for extracting moles. He believed that the pelvic cartilages underwent a certain softening during pregnancy and called attention to the narrowing of the pelvis due to rickets. Levret's work in obstetrics is well described by the title of his book, *L'Art des accouchements de montre' par les principes de physique et de mathematique*. It is this work which has earned for him the honor of being called the founder of rational operative obstetrics. His remarks on extrauterine pregnancy, changes in the uterus during pregnancy, and especially his treatment of uterine polyps marked a great advance. He was the first to show that retention of the placenta after delivery was due to irregularities in uterine contraction rather than malformation of that organ. Levret emphasized that the facility of birth depended upon the concordance of the diameters of the fetal head with the diameters of the pelvis. His work on pelvic inclination is regarded as fundamental. His principal work referred to above remained a textbook for a long time and was translated into many languages. That he was a man of independence of character is shown by an incident which records that when Levret was called to attend the Dauphiness that lady remarked "You must be pleased, M. Levret, to deliver the Dauphiness. That will make your reputation." To which

Levret is said to have quietly replied "If my reputation were not already made, I should not be here." Levret died on January 22, 1780.

ON THE UTILITY OF THE CURVED FORCEPS*

616. The forceps made according to my last correction, is likewise useful in extracting in every case the head of the



Courtesy of the New York Academy of Medicine
ANDRE LEVRET (1703-1780)

child, whether the face is turned toward the side of the pubis, whether it is facing the sacrum, whether it is applied to one or the other of the ilia, whether it presents itself first in the birth canal, or whether it is the occipital region which was advanced first; for there is not a single one of these instances in which this instrument has not succeeded with me.

* Levret, Andre. *L'Art des Accouchemens*. Paris, 1761, p. 109.

617. Besides it is well to note that the deeply engaged head always allows the introduction of the blades of the forceps when it is well made and skillfully used; because the head lends itself sufficiently to their passage without any necessity for using a force capable of harming either the mother or the child.

618. Consequently, one should not neglect making use of the forceps when the head of a child otherwise well formed, is found to be very large without being hydrocephalic, and is engaged in the birth canal of a well formed pelvis; because by means of this instrument one makes advancement little by little and subsequently its removal.

619. If to these observations dictated by practice, one adds the demonstration which I have several times made of the particular junction of the pelvic bones in women, compared with that of the pelvis in men, he will be convinced that these bones then draw more or less apart according to necessity.

620. The forceps can also be of great utility in avoiding the pernicious effects of the delay in removing the child, whose head has descended into the vagina with engagement there, as for example, 1. In the case of threatening hemorrhages. 2. In the case of convulsions which always greatly threaten mother and child. 3. At the time of the complete cessation of the pains of delivery. 4. At the time of prostration of strength. 5. When the umbilical cord is too short of itself, or too much shortened by being wound around the child's organs, to permit the head to be born. 6. When the cervix uteri grips so strongly the child that the delivery cannot be spontaneously ended. 7. In case of a marked retention of urine. 8. This instrument can also be used very servicably to remove from the vulva the child's buttocks when appearing first it is situated in the lower part of the pelvis, and when it threatens to tear the perineum.

621. The curved forceps is also of especial usefulness in extracting the shoulders of the child, when they are situated in such a way that one of them rests near the symphysis pubis, and the other on one of the *sacro-iliacal* symphyses.

622. I have noticed that, in that case, the head is not engaged; that it is entirely in the vagina which it exactly fills, and in which one can move it on the spine which serves as a pivot for it; but one always finds the face turned a little obliquely toward one of the lateral parts of the pelvis.

623. It is true that in each of the cases we have just spoken of, from some points of view seems to require a special manual; but I have thought out a general one which is applicable to all the cases.

624. As for the varieties which this method is susceptible of, for the greatest degree of perfection in the operation, I shall always consider it my duty not to omit a single one in my demonstrations—whether on anatomical models or on the living subject.

625. The curved forceps can be, finally, of very great help in extracting the head of the child which remained in the uterus, after having been separated from the body at the time of its extraction.

626. This forceps is without a doubt preferable in every respect to the best made and best handled hooks, in all the cases which we have demonstrated.



William Smellie · 1697-1763

THIS "Master of British Midwifery" and "one of the most important Obstetricians of all times and countries" was born in Lanark in 1697. He studied medicine at Glasgow and in 1720 began to practice in his native town. At first he was engaged in general practice and is said to have also eked out his scanty income by keeping a shop as a cloth merchant. However, as early as 1728, he is described as an "apothecary and surgeon of Lanark." Smellie removed to London in 1738 and the next year went to study under Gregoire, in Paris. On his return to London he began to teach midwifery by means of demonstrations upon a "machine" and by attending the poor in their own homes. He is said to have placed a paper lantern outside his house with "Midwifery

taught for five shillings" upon it. After twenty years as a teacher and practitioner, he retired to the country and devoted his time to the preparation of his cases for publication. In this he was assisted by Tobias Smollett who, in addition to his literary efforts, had also practiced midwifery. When we review Smellie's contribu-



WILLIAM SMELLIE (1697-1763)

From a print in the library of the Royal Society of Medicine. The original portrait is said to have been painted by Smellie. From H. R. Spencer: *History of British Midwifery*.

tions to obstetrics we realize that his influence on the fundamentals of that science probably has been greater than that of any single individual. The forceps which he devised was not only the most efficient instrument of his day but the instrument which he produced has not been essentially improved since. Smellie also devised the scissors perforator and the curved and double articulated crochiet. Following the work of Ould, his contribution to our knowledge of the mechanism of labor is of fundamental importance. His additions to our knowledge of contracted pelvis

was also noteworthy. He not only gave directions for measuring the pelvis but was the first to measure the diagonal conjugate diameter and this today remains the most important pelvimetric maneuver we possess. Smellie in opposition to Levret showed that the transverse diameter of the superior strait was the greatest. In occiput posterior position he rotated the head with forceps and also applied forceps to the aftercoming head in difficult breech delivery.

Smellie elaborated the method of delivering the head in breech cases which had been previously described by Giffard and which is known today as the Smellie maneuver. In his account of Smellie, Spencer concludes that "one must make a tribute of admiration for his great achievements in circumstances which would have discouraged a less heroic man. Without powerful friends to help him, without the advantages of a hospital clinic, but attending and teaching in the homes of the poor, by sheer devotion to his art he raised himself to the foremost position in his profession."

RULES FOR USING THE FORCEPS*

Let the operator acquire an accurate knowledge of the figure, shape, and dimensions of the Pelvis, together with the shape, size and position of the child's head.

Let the breech of the woman be always brought forwards, a little over the bed, and her thighs pulled up to her belly, whether she lies on her side or back, to give room to apply, and to move the forceps up or down, or from side to side.

Let the parts be opened and the fingers pass the Os internum; in order to which, if it cannot be otherwise accomplished, let the head be raised two or three inches, that the fingers may have more room; if the head can be raised two or three inches, that the fingers may have more room; if the head can be raised above the brim, your hand is not confined by the bones: for, as we have already observed, the Pelvis is wider from side to side at the brim, than at the lower part: if the fingers are not past the Os uteri, it is in danger of being included betwixt the forceps and the child's head.

The forceps, if possible, should pass along the ear, because, in that case, they seldom or never hurt or mark the head.

* Smellie, W. *Midwifery*. London, 1779, vol. 1, p. 243.

They ought to be pushed up in an imaginary line, towards the middle space between the navel and Scrobiculus cordis, otherwise the ends will run against the Sacrum.

The forehead ought always to be turned into the hollow of the Sacrum, when it is not already in that situation.

When the face presents, the chin must be turned to below the Os pubis, and the hind-head into the hollow of the Sacrum.

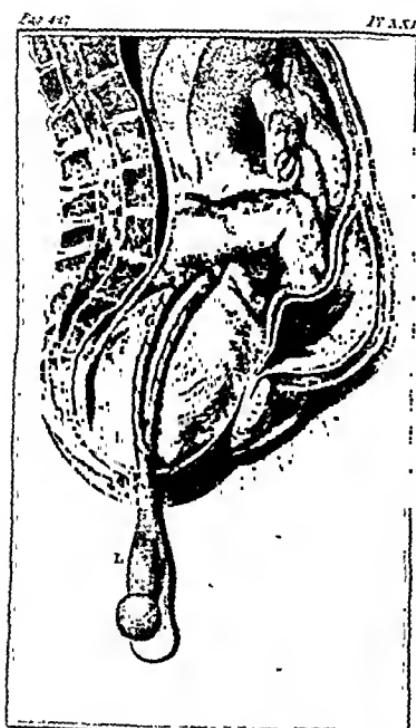
When the shoulders rest at the Pubes, where they are detained, the head must be turned a large quarter to the opposite side so as that they may lie towards the sides of the Pelvis.

The head must always be brought out with an half round turn, over the outside of the Os pubis, for the preservation of the Perinoeum, which must, at the same time, be supported with the flat of the other hand, and slide gently backwards over the head.

When the head is so low as to protrude the parts, in form of a large tumour, and the Vertex hath begun to dilate the Os externum, but instead of advancing, is long detained in that situation, from any of the forementioned causes of laborious cases, and the operator cannot exactly distinguish the position of the head, let him introduce a finger between the Os pubis and the head, and he will frequently find the back-part of the neck, or one ear, at the fore-part, or towards the side of the Pelvis: when the situation is known, he needs not stretch the Os externum, and raise the head, as formerly directed; but he may introduce the forceps, and they being properly joined, and their handles tied, pull gently during every pain; or if the pains are gone, at the interval of four or five minutes, that the parts may be slowly dilated, as they are in the natural labour: but, when the situation cannot be known, the head ought to be raised. The same method may also be taken when the face presents, and is low in the Pelvis, except when the chin is toward the back part: in this case the head ought to be raised likewise.

Almost all these directions are to be followed, except when

the head is small, in which case it may be brought along by the force of pulling; but this only happens when the woman is reduced, and the labour-pains are not sufficient to deliver the child; for the lower part of the Uterus may be so strongly contracted before the shoulders, and so close to the neck of



Engraved by W. Jonathan T. Cudell & Co. from a Drawing by J. G.

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Safely delivered. But if the Feme be large and the Pelvis narrow, the difficulty will be greater, and the Child in danger; as in the following Table.

*Pide Vol. I. Lib. III. Chap. 3. Sect. 4. No. 3.
Vol. II. Coll. 16. No. 2.*

THE TWENTY-FIRST TABLE

Showeth the Head of the *Fetus* in the same position as in the former Table, but being much larger, it is by strong Labour-pains squeezed into a longish form with a Tumor on the *Forehead*, from the long compression of the Head in the *Pelvis*. If the Child cannot be delivered with the Labour-pains, or turned and brought foilding, the Forceps are to be applied on the Head as described in this figure, and brought along as it presents; but if that cannot be done without running the risque of tearing the *Perimenum*, and even the *Figm.* and *Rectum* of the Woman, the Forehead must be turned backwards to the *Sacrum*. To do this more effectually, the Operator must grasp firmly with both Hands the handles of the Forceps, and at the same time pushing upwards raise the Head as high as possible, in order to turn the Forehead to one side, by which it is brought into the natural position; this done the Head may be brought down and delivered as in Table XVI. &c.

ANATOMICAL TABLES

the child, as to prevent its advancing, even when the head is so loose in the Pelvis, that we can sometimes push our fingers all round it: and this is oftenest the occasion of preventing the head's being delivered when low in the Pelvis. The difficulty, when high up, is from the restraint at the brim, and when it passes that, the head is seldom retained in the lower part, unless the patient is weak. In this case, we need not wait, because we are commonly certain of relieving the wom-

an immediately with the forceps, by which you prevent the danger that may happen both to the mother and child, by the head's continuing to lodge there too long. This case should be a caution against breaking the membranes too soon, because the Uterus may contract too forcibly and too long before the shoulders; when the head in this case is advanced one third or half way on the outside of the Os externum, if the pains are strong, this last inconvenience is frequently remedied by introducing your two fingers into the Rectum, as formerly directed: by these rules, delivery may (for the most part) be performed with ease and safety: nevertheless, the head is sometimes so squeezed and locked in the Pelvis, and the hairy scalp so much swelled, that it is impracticable to raise up the head, so as to come at the ears or Os internum; or to distinguish the sutures of the skull, so as to know how the head presents. In this case, the forceps must be introduced at random, and the uncertainty of the position generally removed by remembering, that in those cases, where the head is squeezed down with great difficulty, the ears are for the most part towards the Os pubis and Sacrum; and that the forehead seldom turns into the hollow of the Sacrum, before the Occiput is come down to the lower part of the Ischium; and then rises gradually towards the under part of the Os pubis, and the Perinoeum and Anus are forced down before it, in form of a large tumor.



Of the Requisite Qualifications of Accoucheurs, Midwives, Nurses who attend lying-in Women, and wet and dry Nurses for Children.

OF THE ACCOUCHEUR

Those who intend to practice Midwifery, ought first of all, to make themselves masters of anatomy, and acquire a com-

* Smellie W. *A Treatise on the Theory and Practice of Midwifery*. London 1756. Third Ed. Corrected, p. 410.

petent knowledge in surgery and physic; because of their connexions with the obstetric art, if not always, at least in many cases. He ought to take the best opportunities he can find, of being well instructed; and of practicing under a master, before he attempts to deliver by himself.

In order to acquire a more perfect idea of the art, he ought to perform with his own hands upon proper machines, contrived to convey a just notion of all the difficulties to be met with in every kind of labour, by which means, he will learn how to use the forceps and crochets with more dexterity, be accustomed to the turning of children, and consequently, be more capable of acquitting himself in troublesome cases, that may happen to him when he comes to practise among women: he should also embrace every occasion of being present at real labours, and indeed of acquiring every qualification that may be necessary or convenient for him in the future exercise of his profession: but, over and above the advantages of education, he ought to be endued with a natural sagacity, resolution, and prudence; together with that humanity which adorns the owner, and never fails of being agreeable to the distressed patient: in consequence of this virtue, he will assist the poor as well as the rich, behaving always with charity and compassion. He ought to act and speak with the utmost delicacy of decorum, and never violate the trust reposed in him, so as to harbour the least immoral or indecent design; but demean himself in all respects suitable to the dignity of his profession.



John Harvie.

IN 1767, John Harvie, who succeeded Smellie as a teacher of midwifery at Wardour Street, published a small book entitled *Practical Directions, shewing a method of preserving the perineum in birth and delivering the Placenta without violence.* In this work Harvie emphasized, for the first time in the history of Obstetrics, external manual expression of the placenta. Although the same

Practical Directions

SHEWING

A Method of preserving the
PERINÆUM IN BIRTH,

AND

DELIVERING THE PLACENTA
WITHOUT VIOLENCE.

ILLUSTRATED BY CASES.

BY

JOHN HARVIE, M.D.
TEACHER OF MIDWIFERY.

L O N D O N

Printed for D. WILSON and G. NICOL
the Strand, 1767.

maneuver was to become known later as "Dublin method" and also the "Crede method," it is to John Harvie that the credit should be given for its introduction as an important obstetrical procedure. Harvie also taught that the head of the child lies with one ear usually toward the pubes and the other toward the sacrum and stated that he had noticed the frequency of this position in his "frequent opportunities to open women who died undelivered."

Harvie's method of preserving the perineum by supporting it with the hand was not an innovation, the practice of the procedure going back to the time of Soranus.

OF THE PLACENTA*

From the earliest to the present times, different opinions have obtained, and different directions have been given, about the method of delivering the placenta. The truth of this may appear by consulting the numerous authors who have written on midwifery, and by conversing with the present practitioners.

The first, and perhaps the most general, method has been to deliver the placenta immediately after the child. To perform this, some have recommended an immediate introduction of the hand; others have advised pulling by the navel string; and some again say that the woman should be brought to sneeze, cough, or vomit.

The second method is to leave this business principally to nature.

The practice of delivering the placenta immediately after the birth of the child, by introducing the hand into the uterus, so as to separate and extract it, which many practitioners have adopted as a right and necessary measure, is attended with great pain and danger.

By such treatment the uterus must often be injured, and the consequences of this may soon after be mortification and death. But allowing that so great hurt is not done, another

* Harvie, John. *Practical Directions: Shewing a Method of preserving the Perinacum in Birth, etc.* London, 1767.

consequence, no less dangerous though not so suddenly destructive, is much to be dreaded; I mean an inflammation with the fever which it produces; a fever indeed so fatal that few survive it, though attended from the beginning by the most eminent and the most able physicians.

I have ever been cautious of doing anything, from which danger of even the slightest inflammation could ensue to the uterus; and from a careful observation of what has happened in my own practice, I can assert that where the hand has been introduced, whether to deliver the placenta, or to turn the child, women seldom or never recover so perfectly well as these do where nature has done her own work.

Did even less pain and danger attend this practice, yet surely there can be no reason for pursuing it invariably, as if, after the delivery of a child, nature could do no more. It is far otherwise; she is mistress of her own work, and seldom fails performing it. We may therefore flatter ourselves that this method will in time be entirely exploded, as I know it to be at present by a few of the most skillful in our profession.

This practice was introduced by several prejudices. Thus, some say, if we wait any time for nature, suppose even an hour, the hand cannot then be introduced with such ease, either to the patient, or to ourselves, as if it had been done immediately after the delivery of the child.

To this the answer is easy: viz. an extraneous body lodged in the uterus will prevent its strong contraction; therefore, whilst the placenta remains, this cannot happen; so that very little or no difficulty of this kind can occur from waiting.

Another reason given for introducing the hand immediately after the delivery, is that we may know if there is another child; but a touch of the finger will be sufficient for that purpose; and indeed even that precaution is unnecessary; as, by laying the hand upon the belly, a child, if there be one, is at once discovered.

Some practitioners of this class, after the extraction of the placenta, when the patient wishes to be at rest and to be

freed from their tormenting hands, do not even then think their work finished, but have still another cruel operation to perform: viz. that of scooping the uterus; or, in other words, a second introduction of the hand to bring away any coagulated blood that may lodge in its cavity. This they say they do to prevent after-pains; and yet nothing produces them more certainly.

But how can they know whether a patient will have after-pains or not? It has been said that all women have more or less of them, except with the first child: however, experience teaches us, that this is without foundation. Many women are tormented with them after the first, and after every other child; whilst many others, after having had many children, know not what an after-pain is. But supposing that this horrid scooping work prevented them in constitutions where they would certainly take place to a greater or lesser degree, yet it would be a work of supererogation in such habits where none would happen.

It may be doubted whether coagulated blood lodged in the cavity of the uterus, and coming away from time to time, can alone produce these pains; were it so, every woman would have them to some degree; which we know does not actually happen.

I presume that these pains may be often owing to a state of nerves peculiar to some constitutions; and a woman whose nerves are extremely irritable, may have pains more or less, notwithstanding that every precaution is taken to prevent them.

Another of the hurrying methods recommended and practised by some, is that of pulling the umbilical cord to bring down the secundines; a practice, in my opinion, extremely dangerous, and likely to produce an inversion of the uterus.

This must naturally happen if the cord is pulled strongly, and will be still more unavoidable if the placenta adheres firmly; or if the pulling force be made use of immediately after the birth of the child; as at that time, in many women, the uterus is little, if at all contracted; and therefore an in-

version produced in this way must be truely dangerous, if not instantly mortal.



In order to bring away the placenta after the delivery of the child, several authors have recommended, and I am sorry to say it is a most general practice, to make the patient sneeze, cough or vomit; and this last is even produced sometimes by making her to smoke tobacco.

Vomiting thus brought on are often dangerous, and indeed I very lately saw the bad effects of them.

Smoking was recommended to a very delicate young lady where the placenta remained high; and thereby a vomiting was produced, which continued for many days with such violence that she could retain nothing upon her stomach, and her life was in great danger.

But the more usual consequences of being made to cough, sneeze or vomit, are, that by the convulsive efforts the circulation is quickened, and at the same time the blood is with force expelled from the vessels of the uterus. And this discharge will be more considerable and more violent, as the contained placenta must prevent the contraction of the womb, and keep the mouths of the vessels open.

Many women have been destroyed in half an hour by this loss of blood; but many more have been lost by consumptions, dropsies, and the other consequences of so great a discharge.

Such are the different methods made use of by those who either think nature is not to be trusted with her own work; or consider her as incapable of compleating it.

I shall now proceed to show how nature expells the placenta, and the safest and best manner of assisting her.

Soon after the delivery of the child, the contracting force of the uterus separates the secundines from its internal surface, and presses them down upon the mouth of the womb; which action is likewise assisted by the weight of the placenta. In a little time a portion of it slips into the os tincae,

where it produces an irritation and a pain which obliges the woman to strain. Thus by a few efforts it is delivered; and in general it will be so in the space of five minutes, or in some time between that and an hour or so after the birth of the infant.

However, it is certain that there has been, and that there must be again, cases where the placenta will remain much longer, if left entirely to nature.

Sometimes nature requires one, two, three days, or even a longer time to compleat this work. In all these periods she would generally perform it with safety, and women would recover sooner and better than when much force has been used in the extraction; and there are no cases where we may not wait without danger, except only when a flooding comes on. A circumstance that will very seldom occur; but when it does, no hesitation ought to be made in bringing the placenta as soon as we can out of the uterus; having first artfully, and with great caution, separated its adhesion.

But however safe practitioners may know this method to be, they are afraid of pursuing it, as any delay in delivering the placenta alarms the woman even more than a delay in delivering the child: women can be persuaded that pains are necessary to compleat the last; but in the former if not performed instantly, they blame the accoucheur: and for this reason some have made use of force to bring away the placenta sooner than they otherwise would have done.

But nothing can be weaker than to act absolutely against our own judgement in compliance with an ill founded prejudice, as gentle persuasion and reasoning may gain the necessary time; and there can be no great difficulty in obtaining this, where the patient places confidence in her director.

Fevers after delivery generally come on rather from bad nursing, than from the birth itself; but as it may come on after any labour, however judiciously managed, if the placenta should remain, it will be imputed to that cause; therefore practitioners do not chuse to risk their reputation by

leaving it; yet this risk a skilful and honest accoucheur should disregard.



My pupils, who deliver many poor women, according to my instructions, have, of late, left the delivery of the placenta to nature. In general, it comes away soon; but if, after waiting an hour, there is no unusual discharge, they order the woman to be carefully put to bed, and then leave her. In such cases, I have not known of any placenta that has remained longer than nineteen hours; and all the women thus treated have recovered to great advantage.

Is it not, therefore, reasonable to believe that nature would compleat this part of her work with safety, as often, if not oftener, than she does the delivery of the child? Would it not then be the most rational and judicious practice? Undoubtedly. And every judicious and experienced practitioner, will in time be convinced, that there is but one objection to it; viz. its novelty. Women have not been long and generally used to it; for which reason they will be afraid of it; and, if any case should turn out disagreeably, they and their friends will exclaim against it. This prejudice, I am convinced, is now all that we have to combat with.

Long imbibed prepossessions render this extremely difficult; as women, if the smallest portion of the placenta, or its membranes, be left in the uterus, have been used to think themselves in the same danger, as if no part of them had been delivered.

However, it frequently happens, that a part, and sometimes the whole of the membranes, are torn off, and left behind, even in cases where the cake is delivered by nature alone; yet I never saw any bad consequences from these incidents.

In the following manner, nature may be greatly assisted; and without any addition of pain. After the child is delivered, the navel-string tied, and the child given to the nurse's care, take the navel-string in your left hand, gently pull down

its loose part, till you feel that it is a little tightened, and by it guide the fore-finger of your right hand; thus you will commonly feel that a part of the placenta is fallen into the os uteri, and often that portion of it, into which the navel-string is inserted.

In either case, by gently pressing the finger against the part felt, and continuing the pressure in the direction of the axis of the pelvis, that is, downwards and backwards, it will presently fall out of the uterus; and then it may be easily slipped out of the vagina, by the same finger.

From the largeness, thickness, and figure of the placenta, or from its coming into the os tincae, in a double manner, it would now and then stick for a long time in that situation, unless assisted in the way I have recommended. When it falls down in this manner, it will likewise be particularly necessary to insinuate the point of the finger so as to get it above the edge of the placenta, and thus hooking it down, to reduce it to a lesser bulk. Sometimes the edge of the placenta may be easiest come at by passing the finger up underneath the ossa pubis, at other times by passing the finger backwards, or towards the sacrum.

There is another safe method of assisting nature in the delivery of the placenta, and which, for these five or six years last past, I have found to answer generally very well in practice. As soon as the child is committed to the care of the nurse, let the accoucheur apply his hand upon the belly of the woman, which is then very loose, and he will readily feel the contracting uterus: then having placed the flat of the hand over it, let him, by a light and gentle pressure, bring it downwards, or towards the pubes, and he will feel the uterus sensibly contracting, and often will feel it so reduced in size, as to be certain that the placenta is expelled. By this method we will seldom have anything to do afterwards, but to help it through the os externum; if even so much remains undone.

After the placenta is thus delivered, it may be advisable to apply the hand, as before, upon the belly; and if the uterus

is found to be too large, the pressure cautiously repeated, will expel the greatest part of the coagula, which produced this encrease of bulk.

Thus nature herself, or assisted in one or other of these two methods, will not near so often as once in a hundred times, fail in doing this part of her business; and even in that one case, of so great a number, were she left entirely to herself, it is more than probable, that, in the end, her work would be safely accomplished. By this treatment, many women would be saved, who now lose their lives, from the placenta's being forced away by the introduction of the hand.

When the placenta is delivered by nature alone, or with that sort of assistance which we have recommended, in general it comes away inverted; that is, the side which was in contact with the child, comes first; and the side which adhered to the uterus, is covered by the membranes; thus the lobular side is rendered smooth, and, of course, slips away with ease, and perfectly whole.

If the placenta be separated with force, and brought away by the hand, the reverse takes place; that is, the lobular size comes away first; which is thence liable to be torn, and some part of it even to be left behind.

It is generally recommended to the practitioner in Midwifery, to shew the placenta, before he goes away, to some of the females present. This must, no doubt, give satisfaction. But it is not my business to teach what good sense, or common discretion and prudence, will tell every practitioner.

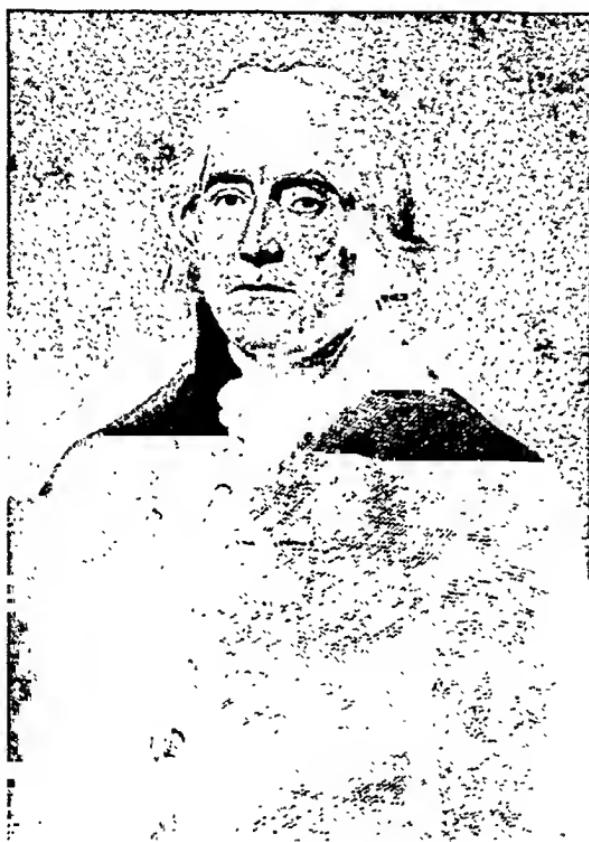
FINIS.



Thomas Denman · 1733-1815

THOMAS DENMAN, the son of John Denman, an apothecary at Bakewell, was born June 27, 1733. At the age of 21 he came up to London and began to study medicine at St. George's Hospital. After a short time, because of lack of funds, he was obliged to

abandon his work and, in order to support himself, he joined the British Navy as a surgeon. After an active life in this service, in which he saw considerable action, in 1763 he resumed study and applied himself particularly to midwifery. The next year he obtained the degree of M.D. from Aberdeen. In a short time he



THOMAS DENMAN (1733-1815)
From a print in the library of the Royal Society of
Medicine. From H. R. Spencer: *History of
British Midwifery*.

began to lecture on midwifery at London and in 1769 he was appointed Physician Man-Midwife to the Middlesex Hospital. His reputation as a teacher and practitioner soon increased and, after the death of William Hunter in 1783, he obtained the first position in midwifery practice. In this year also Denman was admitted the first Licentiate in Midwifery of the College of Physicians.

Toward the end of his life Denman limited his extensive practice more and more to consultation. He died suddenly on November 25, 1815 and was buried at St. James Church, Piccadilly. Matthew Baillie has given us this description of Denman. "in person he was firmly and strongly made, about five feet eight inches in height; his hair was perfectly white, his complexion fresh and vigorous, his eye which was blue, continued remarkably clear and bright; his hearing was unimpaired, and his teeth remained entire to the very last. Such he was in his eighty second year."

Denman's reputation rests chiefly on his *Aphorisms* and his *Introduction to the Practice of Midwifery*. The latter work was published when the author was sixty-one years of age and went through five editions during his lifetime. In this work appears for the first time what Spencer terms "that purely English operation, Induction of Premature Labour in cases of contracted pelvis." Denman also first described Spontaneous Evolution (1772). Denman's treatment of convulsions by means of opium, bleeding, hot baths and fomentations, and early delivery appears quite modern. He shares also the right to be regarded as one of the pioneers in the knowledge of the contagiousness of puerperal sepsis. Like his predecessors Hunter and Smellie, Denman believed in conservative obstetrics and wrote. "It must however be acknowledged that all the errors of practice do not proceed from ignorance of the art. Some of them may justly be imputed to our entertaining too much confidence in our own dexterity, or too little dependence on the natural efforts and resources of the constitution." Denman's extraordinary influence both in Great Britain and the United States, not only during his lifetime but for a considerable time later, was primarily due to the sound obstetrical doctrines which he taught and practiced.

ON THE PROPRIETY OF BRINGING ON PREMATURE LABOUR AND THE ADVANTAGES TO BE DERIVED FROM IT*

We have before alluded to this operation as a method of preserving the lives of children, without adding to the danger of women, if in any case the pelvis were so much distorted, or

* Denman, Thos. *Practice of Midwifery*. New York, 1829.

so small, as absolutely to prevent the passage of the head of a full grown child, and yet not so far reduced in its dimensions as to prevent the head of a child of an inferior size from passing through it. Melancholy are the reflections when a woman has a pelvis so very much distorted (and such women have usually a wonderful aptitude to conceive) that there should be no chance, or very little, of preserving the lives of her children; and yet, in the course of practice, I have in many instances been called to the same woman, in five or six successive labours, merely to give a sanction to an operation, by which the children were to be destroyed. It is to the credit of the profession, that every method by which the lives of parents and children might be preserved, has been devised and tried; and though frequent occasions for using some of these methods cannot possibly occur in any one person's practice, it is right that all should be acquainted with what has been proposed and done in every case of great difficulty, with or without success.

A great number of instances have occurred, of women so formed, that it was not possible for them to bring forth a living child at the termination of nine months, who have in my own practice been blessed with living children, by the accidental coming on of labour when they were only seven months advanced in their pregnancy, or several weeks before their due time. But the first account of any artificial method of bringing on premature labour was given to me by Dr. C. Kelly. He informed me, that about the year 1756, there was a consultation of the most eminent men at that time in London, to consider of the moral rectitude of, and advantages which might be expected from, this practice, which met with their general approbation. The first case in which it was deemed necessary and proper fell under the care of the late Dr. Macauley, and it terminated successfully. (The patient was the wife of a linen-draper in the Strand.) Dr. Kelly informed me, that he himself had practised it, and among other instances, mentioned that he had performed this operation three times upon the same woman, and twice the children

had been born living. The thing was often the subject of conversation, and has been proposed by writers, but some have doubted the morality of the practice; and the circumstances which may render the operation needful and proper, and have not been stated with any degree of precision; but the practice afterwards became almost obsolete or forgotten.

But respecting the utility of the operation, the statement first made of the intention or purpose with which it ought to be done, that is, to try whether the head of a small child will not pass through a pelvis too much narrowed in its dimensions to allow one of a common size to pass, will show, that the objects of the operation are circumscribed within certain limits. Should the cavity of the pelvis be of its natural size, this operation is out of the question, and never can be required on that account. If the cavity of the pelvis, though reduced in its dimensions, be such as to permit the head of a full grown living child to be squeezed through it by the force of strong and long continued pains, this operation is not required, and ought not to be performed, except in some particular cases in which it may be thought eligible. If the pelvis be so far reduced in its dimensions as not to allow the head of a child of such a size as to give hope of its living, to pass through it, the operation cannot be attended with success, though it may free the patient from much suffering. It is in those cases only in which there is a reduction of the dimensions of the pelvis to a certain degree, and not beyond that degree, that this operation out to be proposed, or can succeed with complete advantage.

It would be highly satisfactory, if I were able, to state with precision the exact dimensions of the cavity of the pelvis of the person on whom it might be needful to perform this operation, and on whom it might be performed with success. But, as all the instruments and methods contrived for measuring the pelvis in the living woman too imperfectly answer this purpose, to enable us by them to form an unerring guide to practice; and as the head of a child before it is born can

never be accurately measured, of course the exact relation between them must be unknown, and the determination must be therefore left to opinion, and to former proofs: and those who are experienced will not commit any great mistake in their conjectures, even if they have no other than this probable evidence by which their judgment may be guided. Under circumstances and in situations just preventing the successful use of the vectis or forceps, and just compelling us to the fatal measure of lessening the head of the child, it may become a duty to propose on a future occasion, the bringing on premature labour; at seven months, or any later time, according to our sense of the disproportion existing between the head of a child and the cavity of any particular pelvis. It can hardly be doubted, but that the casual events of practice first inspired the notion of this method in the mind of some person, who adverting to the fortunate termination of premature labours coming on spontaneously, or of very small children, in cases of distortion of the pelvis, endeavoured to imitate by art what not unfrequently happens naturally. It is also to be considered, that in a child born prematurely, the bulk of the head is not only much less than at the full time, but the component parts of the head are more loosely connected, and far more pliable, and of course its volume is more readily adapted to the space through which it is to pass.



Marmaduke Burr Wright . 1803-1879

WRIGHT's description of cephalic version, which he gave to the world in 1854, first appeared in pamphlet form entitled *Difficult Labors and Their Treatment*. In discussing this subject the name of Braxton Hicks naturally appears. Hicks' method, which differs somewhat from that of Wright, was first given to the profession in 1860 and more fully in 1864. Hicks had no knowledge of the work

of his predecessor, a fact which he acknowledged in a later communication. The differences in the two methods are briefly these:



Very Truly
M. B. Wright

MARMADUKE BURR WRIGHT (1803-1879)
From Thoms' *Chapters in American Obstetrics*.

in the Wright method there is no direct action on the head as in the Hicks' maneuver, and further, the application of the hand upon the mother's abdomen over the child's breech is perhaps

the most essential feature. In the Hicks' method, however, such application of the external hand is not emphasized. Wright's professional life was spent wholly in the middle west, principally in Columbus, and Cincinnati. In 1838 Wright was elected to the chair of *Materia Medica and Therapeutics* in the Ohio Medical College. A short time after this, he succeeded to the Professorship of Obstetrics and Diseases of Women. He was a pioneer not only in obstetrics but in the medical education of his time and locality. In the closing words of his famous essay he states, "Possibly our time might have been more profitably employed than in writing these pages. If, however, we shall have directed the minds of our brethren into a new train of observations, and, aided in giving a true value to cephalic version, and, especially if life shall thereby be preserved, we shall consider that an ample reward has been bestowed on our labor."

A DESCRIPTION OF CEPHALIC VERSION*

Difficult labor, arising from the presence of either the right or left shoulder of the foetus, at the brim of the pelvis, is not common. Indeed, some prominent obstetricians know nothing of it from experience. He who refuses to examine its nature carefully, however, on this account, will find in the hour of trial, that he has been untrue to himself, and that the lives of confiding and beloved ones, are in double peril. Difficult labors, in truth, cannot be successfully managed without a knowledge of their character, not to say the possession of tact derived from experience. Without the one, he cannot exercise the other. In natural, a want of knowledge would be more excusable than in unnatural cases. The former may terminate favorably, in the midst of inactive ignorance; the latter require action, guided by an enlightened judgment. A man may justly congratulate himself that he has never been entrusted with the management of a difficult case of labor, but he should not cherish the belief, on this account, that his next case will not require special interference. With the present knowledge of the profession, it is impossible to determine the nature of a presentation from external appearance,

* Wright, M. B. *Difficult Labors and Their Treatment*. Cincinnati, 1854.

or from the feelings of the pregnant woman. And it is hardly to be presumed, that a Physician will examine all his patients during the progress of gestation, with a view to ascertain the kind of presentation he is to meet; admitting, that in some cases, the position of the foetus may be ascertained by manipulation through the walls of the abdomen, and by vaginal touch. Hence, the importance of being prepared to treat every case that may occur, in the best possible manner.

Suppose the patient to have been placed upon her back, across the bed, and with her hips near its edge—the presentation to be the right shoulder, with the head in the left iliac fossa—the right hand to have been introduced into the vagina, and the arm, if prolapsed, having been placed, as near as may be, in its original position across the breast. We now apply our fingers upon the top of the shoulder, and our thumb in the opposite axilla, or on such part as will give us command of the chest, and enable us to apply a degree of lateral force. Our left hand is also applied to the abdomen of the patient, over the breech of the foetus. Lateral pressure is made upon the shoulders in such a way as to give to the body of the foetus a curvilinear movement. At the same time, the left hand, applied as above, makes pressure so as to dislodge the breech, as it were, and move it towards the center of the uterine cavity. The body is thus made to assume its original bent position, the points of contact with the uterus are loosened, and perhaps diminished, and the force of adhesion is in a good degree overcome. Without any direct action upon the head it gradually approaches the superior strait, falls into the opening, and will, in all probability, adjust itself as a favorable vertex presentation. If not, the head may be acted upon as in deviated positions of the vertex, or it may be grasped and brought into the strait, and placed in correspondence with one of the oblique diameters.

It will be observed, that we do not act upon the shoulders by raising them. Perhaps a slight elevation would facilitate the movements already described—or it might be better to depress them—and, again, by lateral pressure, without either

elevation or depression, our object might be accomplished. Pushing up the shoulders, therefore, does not constitute a



Fig. 9.

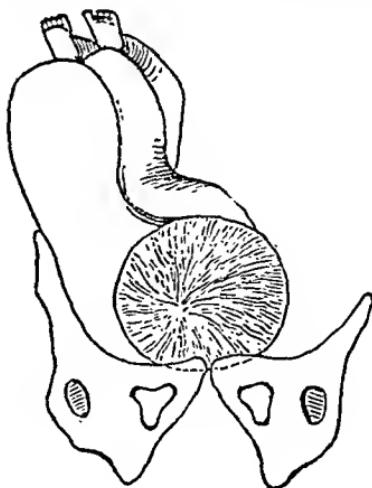


Fig. 10.

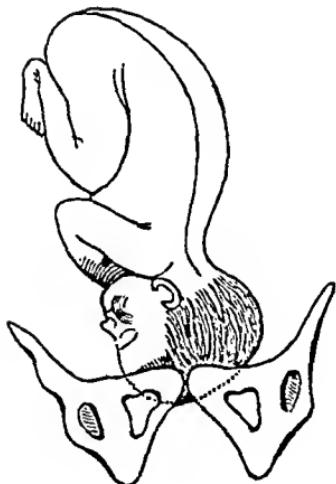


Fig. 11.



Fig. 12.

DESCRIPTION OF PLATE FROM TEXT ESSAY
From Thoms' *Chapters in American Obstetrics*.

prominent part of turning, if by pushing up is meant the mere raising of the shoulders above the brim of the pelvis.

As the body of the foetus makes its curved movement under the hand of the operator, it advances upward, as well as laterally, by a combined rather than a single action, which would give it only one direction.

The back of the hand, with which we have been acting upon the shoulder, is toward the head of the foetus—consequently, its hold upon the head would be apparently slight—yet, after the shoulders have reached the iliac fossa, the vertex may fall upon the palm of the hand in occupying the strait, and its adjustment become easy. If, however, there should seem to be a necessity for grasping the occiput, there could be no reasonable objection to a speedy change of hands.

The entire process of cephalic version is to be adopted in the absence of uterine contraction; or, rather, during the intervals of expulsive force. And, as it is now a vertex presentation, we must be governed, as to the time and manner of delivery, by those general rules applicable to such cases.

In all our cases, except the one which terminated as a face presentation, the occiput assumed a position corresponding with the first or second presentations of the vertex. In this case the occiput was before one of the sacro-iliac symphises, and to this fact we have attributed the tendency of the occiput to slide above the brim of the pelvis, and the difficulty in keeping it in place. If there had been the usual degree of uterine contraction, however, the head would, in all probability, have become fixed, and the presentation would have continued as one of the vertex, instead of changing for the face.

It will be seen that we lay no claim to the introduction of cephalic version as a mode of treating wrong presentations, and expediting delivery. A very brief examination of the subject, however, may induce some to award to us originality in respect to the means by which a successful change of presentation may be accomplished.

The cephalic version, by external manipulation—by acting upon the foetus through the parietes of the abdomen and uterus—should have few advocates is not surprising. To be

successful, it confessedly requires a combination of favorable circumstances not often presented. The tissues both of the abdomen and uterus, must be thin and yielding—the liquor amnii must have been retained, and in considerable quantity—and the foetus must be proportionably small.

In all the obstetrical works we have examined, in which cephalic version is recommended by internal manoeuvre, it is directed to raise the shoulder as the first necessary impression upon the foetus. Viewed anatomically or mechanically, men have not been persuaded into the belief, that raising the shoulder can facilitate the permanent descent of the head into the superior strait. They claim, what is apparent to the eye in viewing a proper engraving, and as it can be demonstrated with the manikin, that the elevation of the shoulder at the brim of the pelvis, tends to increase the long diameter of the foetus, and the transverse diameter of the uterus, and without any favorable adjustment of the head after pressure upon the shoulder has been withdrawn.

Suppose we follow out the directions given by some, and after the elevation of the shoulder, attempt to force the body of the foetus in a lateral direction, will not the breech infringe against the walls of the uterus transversely? To enable the head to engage in the superior strait, the body must be entirely removed from it, and this can only be done by raising the breech towards the fundus of the uterus. Raising the shoulder, therefore, is very naturally considered a means to prevent cephalic version. And we are not surprised that podalic version is almost universally adopted in the treatment of shoulder presentations.

If our mode of performing cephalic version is sufficiently clear, in the description already given, it will readily be distinguished from others. We claim for it great importance, on the ground that it is easily executed—that the mother and foetus receive no injury—that there is little or no danger of subsequent displacement after the vertex has been fully adjusted—that, although it is most successful in recent cases, delivery may be accomplished after the membranes have been

long ruptured—that it may be executed, after ineffectual efforts to bring down the feet.

By an examination of plate 3, figures 9, 10, 11, 12, the different changes which take place in the position of the foetus, during cephalic version, from the return of the arm above the brim of the pelvis, to the first presentation of the vertex, will be observed. These sketches are not designed as faithful representations of every case of shoulder presentation and cephalic version, nor are they claimed as the exact changes which occur in any given case, but as outline illustrations of a general process.



Friedrich Wilhelm Scanzoni . 1821-1891

SCANZONI represents today a name associated principally with a forceps operation. However his contributions to obstetrics and gynecology were noteworthy.

He was born December 21, 1821 and graduated from the University of Prague Medical School in 1844. After various assistantships in the Imperial Royal Lying-In Hospital and the Imperial Royal General Hospital, he was made Professor of Obstetrics and Gynecology in the University of Würzburg and Director of the Lying-In Institution. Here he developed a very large and influential practice and in 1863 the king conferred on him a title of nobility. He died June 12, 1891.

USE OF THE FORCEPS OPERATION*

b. When the sagittal suture runs parallel with an oblique diameter, the frontal suture is however turned toward the forward pelvic wall: so that a single application of the instrument does not reach far enough to turn toward the front the occiput which is in contact with the posterior pelvic wall. Let us consider, for example, the sagittal suture in the right oblique diameter, and the frontal suture situated in the region of the oval foramen on the left; thus, on account of the pelvic curvature of the forceps, it is impossible to apply it in such

* Scanzoni, F. W. *Lehrbuch der Geburtshilfe*. Wien 1853, p. 838-40.

a way that the concavities enclose the head on both of its side-surfaces, and at the same time are directed with their points and their concave walls toward the occiput, which is located on the rights sacro-iliacal synchondrosis.

Recognizing this very well, Lange, in the plan of his we have already cited, advised that in this position of the skull, the forceps should always be applied so that its transverse diameter would be parallel with the oblique diameter of the pelvis, in which the sagittal suture of the head runs along. We tried repeatedly to follow this advice, nevertheless we have been convinced of its complete practical uselessness. On the one hand, in most cases it is already very difficult to introduce and to apply both blades of the forceps correctly in those regions of the pelvis in which the head is in close contact with the pelvic wall, which, according to Lange's plan, must always happen; on the other hand, if the application of the forceps

should succeed in the pre-arranged manner, the forceps then encloses the head almost in the direction of its upright, or in the most favorable cases, of its oblique diameter. Thus it is applied to portions of the head which are in no position to offer it a solid resting place, and so it happens that if one follows Lange's plan, in the rotation certainly in nine cases out of ten only the forceps move; but the head remains unmoved. We have had this experience so often in living bodies, as well as in cadavers and anatomical models, that we feel justified in pronouncing this method of operation as being a most labori-



FRIEDRICH WILHELM (VON LIGHTENFELS)
SCANZONI (1821-1891)

ous and painful one, and certainly leading to good results in only the rarest instances.

Since we proceed from the conviction that to succeed in rotation it is above all necessary that the forceps be applied solidly and fixedly to the head, and that this can only be looked for, if it encloses the head on both of its lateral surfaces we therefore consider it indispensable in the position of the head which was described in detail above, that the instrument be applied twice and then as much as possible to the lateral surfaces of the head. Our method then, is the following: If the head is placed with its forehead turned forward and to the left, in such a way that the sagittal suture runs in the right oblique diameter, then the left blade is applied in front of the left sacro-iliac synchondrosis, the right one behind the right oval foramen. Thus the transverse diameter of the forceps is in the left oblique diameter of the pelvis, its concavities and points are turned towards the forward circumference of the left lateral hemisphere of the pelvis, and thus also toward the forehead which is there. Now by the following rotation of the instrument, directed from right to left, describing the eighth of a circle, by which the right concavity of the instrument comes to be almost behind the symphysis ossium pubis, the left one in the hollow of the os sacrum, the head is so rotated that the forehead which was previously in the front and toward the left is moved to the middle of the left side wall of the pelvis; the occiput is moved to the middle of the right side wall of the pelvis, and the sagittal suture is placed parallel with the transverse diameter of the pelvis.

Now both of the blades of the forceps are laid aside, and once again applied in such a way that the left concavity becomes to be behind the left oval foramen, the right concavity in front of the right sacro-iliac connection, whereby through this new rotating of the instrument, the occiput is brought completely under the pubic arch.

If anyone wished to possibly object that this method of operation cannot be carried out with a head that is located higher up, because of the obstacle which is put in the way

of the concavity of the blade which moves in the posterior part, i.e., the projection of the promontory; we believe to invalidate this objection it is necessary to simply point out that with the head situated high up we consider that method of rotation especially inadmissible. Therefore our method is not intended for such cases. But in a head which is situated deep in the pelvic cavity, it is certainly easy to put in operation, as it is completely without danger. For this if space permitted, we could give a considerable number of experiences which we have had ourselves.



Etienne Tarnier . 1828-1897

AMONG THE hundreds of obstetrical forceps which have been designed since the invention of the instrument, one type, which bears the above name, is known in all obstetrical hospitals. The Tarnier Axis Traction Forceps, because of its great usefulness in applying the axis traction principle, is today of practically universal use wherever scientific obstetrics is practised. Tarnier was born at Dijon, France, April 26, 1828. From 1846-1848, he attended the Lycée. From 1850 to 1853, he was an interne in the hospitals at Paris and in 1856 he became interne at the Maternité under Paul Dubois. A year later he presented his thesis for the Academy on the subject of Puerperal Fever. Tarnier was the first to employ carbolic solutions in obstetrics and was the introducer of the milk diet in pregnancy. In 1867 he became surgeon-in-chief to the Maternité. In 1889, he succeeded Pajot as Clinical Professor of Obstetrics.

DESCRIPTION OF TWO NEW FORCEPS*

Advantages of the new forceps over the ordinary forceps. With the new forceps I have just described we have the following advantages.

1. The traction will not need to be as energetic as with the ordinary forceps. Indeed if we assume that the head offers a resistance of 17 kilograms to the efforts at extracting it which

* Tarnier E. *Description de Deux Nouveaux Forceps*. Paris, n. d.

will be made, above the superior strait or on a level with the vulvar orifice, it will be sufficient to pull on the new forceps with a force of 17 kilograms because all of that force is used in overcoming the resistance which the head offers. On the contrary, with the ordinary forceps, to obtain the same result, it would be necessary to pull with considerably more force because the force would be broken up, one part into useful force and the other into harmful force, the effect of which increases the resistance of the head.

2. With the new forceps, all the force that is used draws the head into the axis of the pelvis, and produces no compression on the maternal tissues. On the contrary with the ordinary forceps, these tissues are compressed during the operation, because the traction is partly converted into a harmful force.

3. Since the new forceps draws into the axis of the pelvis, the fetal head has no tendency to escape from the blades while that often happens with the ordinary forceps, since the tractions there are oblique with respect to the axis of the pelvis, hence the head supported against the pubis, slips between the blades and escapes posteriorly.

4. The handle of the new forceps, being directed transversely gives a much more comfortable and solid grasp to the hands of the operator than that which is obtained by applying the hands to the handles of the ordinary forceps. More than that, this handle, pivoting around the traction rods, can be directed in the final moment of the delivery along the axis of the instrument. The hand thus draws near the genitalia, as shown on figure 29, and can be much more comfortably placed than with the forceps of Levret; finally it acts in the axis of the vulvar orifice whether you make any attempts at extraction or you seek to retard the birth of the head, as is sometimes useful.

5. Once the blades of the new forceps are pressed on the fetal head by the V vice, the pressure does not increase with the force of the traction made on the transverse handle of the instrument; while the hands of the operator produce on the handles of the ordinary forceps or the forceps of Moralés,

pressure which transmitted to the head, is all the stronger in that the tractions are more forceful; and the head thus laterally compressed, lengthens from anterior to posterior. This increases the difficulties of delivery, especially when the pelvis is too narrow in its antero-posterior diameter as can be commonly observed.

6. Since the blades of the new forceps are short and rise up in an acute curve, they seize the fetal head without pushing it below. Under these conditions it is the lowermost part of the head which first touches the perineum, just as is the case in a natural delivery, and you can always direct the tractions into the very axis of the pelvis, without fear of destroying the perineum with the blades of the instrument. Just the opposite happens both

with the ordinary forceps as well as with those of Hubert or Moralés, the blades of which being disproportionately long, press down severely on the perineum, when the center of the head is still on a level with the superior strait. With these latter forceps therefore, you are exposed to the danger of destroying the perineum if you persist in pulling along the axis of the pelvis, thus you are forced to modify tractions, to carry them too far forward, and consequently to give them a false direction.



E.TARNIER

ETIENNE TARNIER (1828-1897)

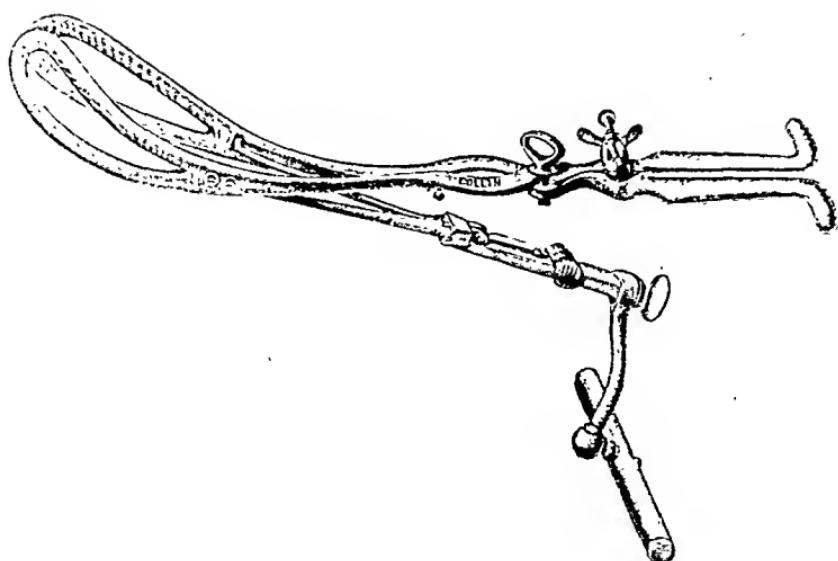


FIG. 18. — Forceps de TARNIER, dernier modèle avec l'appareil de traction.

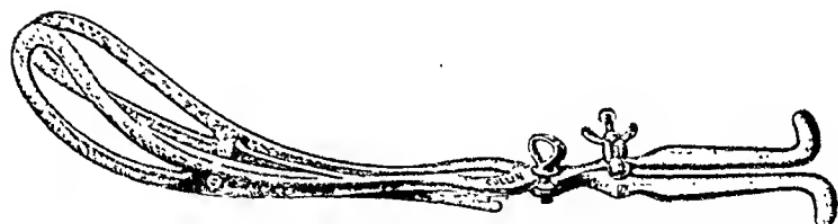


FIG. 19. — Forceps de TARNIER, sans l'appareil de traction.

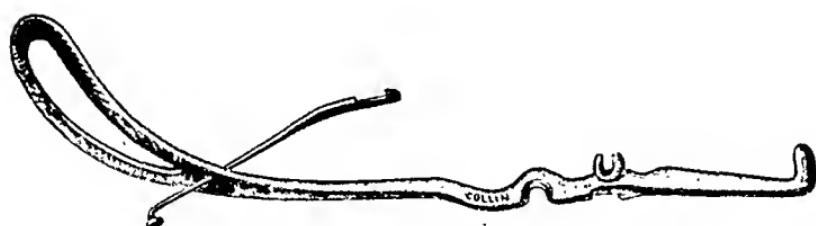


FIG. 20. — Adaptation de la branche de traction à la cuiller du forceps.

THE TARNIER AXIS TRACTION FORCEPS

From Siebold E. G. J. *Essay on the History of Obstetrics*. Paris, 1892,
Vol. III, p. 101.

7. In addition to the advantages of traction made along the axis of the pelvis, there is another one in the new forceps; i.e., an arrangement which allows the head the liberty of always following the curvature of the birth canal. Thanks to the mobility of the articulation of the traction rods on the grasping handles, the head can still easily and spontaneously execute its rotating movement around the axis of the pelvis; but if you wish to produce this rotation artificially you must take care to make this maneuver with the grasping handle and the traction rods firmly in the hand, because if you sought to make the head turn with the aid of the traction rods alone, you would fall into error.



Max Sanger . 1853-1903

THE DEVELOPMENT of the present day technique of the classical caesarean section largely emanates from the noteworthy contributions of Max Sanger to that subject. It was he who in 1882 emphasized the necessity for the employment of uterine sutures. Much of the early work on uterine suspension and kraurosis vulvae was done by Sanger. His paper on *The Technic of Amputation of the Supravaginal Myomata of the Uterus*, which appeared in 1881, is today a document of not only great practical but of distinctly historical interest. Sanger was born in Bayreuth, May 14, 1853. He received his M.D. at Leipsic in 1875. For two years he was assistant to Wagner and from 1878 to 1881 was Privat-docent. In 1890 he was made Professor Extraordinary. In 1899 he was made Ordinarius and President of the Gynecological Clinic at Prague. In this year also he became co-editor of the *Archives of Gynecology*. With Herff of Halle, Sanger collaborated in publishing an encyclopedia of obstetrics and gynecology. He died January 12, 1903.

THE CLASSIC CAESAREAN OPERATION*

Even though the technique is still considered to be lacking in certainty and completeness, nevertheless the classic Caesar-

* Sanger M. *Der Kaiserschnitt bei Uterusfibromen, etc.*, Leipsic, 1882, p. 186.

ean Section is the one and only universal method of operating which can be applied to all indications. The other methods which compete with it, including Porro's operation should be considered as appropriate for one indication at the most, for others they are not applicable.

1. The Gastro-Elytrotomy. This operation seeks to solve

the problem of emptying the uterus from its natural orifice by opening the vaginal sheath on the lower part of the peritoneum and in the upper part of the pelvis. The operation developed at a time when there was justifiable fear of opening the peritoneal cavity (Jörg, Ritgen, etc.) and has been lately taken up again in the United States (by Thomas and Skene), and has been carried out by Glück (5 operations: 3 mothers living, 4 children living.). In spite of their success and of Garrigue's splendid recommendation, it has not yet



Garrigue

MAX SANGER (1853-1903)

been widely used in Europe. It cannot offer a complete substitute for the classic caesarean operation, since in many cases it encounters insurmountable difficulties: for example in tumors which have filled up the vaginal sheath. Then under other circumstances it is too dangerous for the adjacent organs (bladder, urethra, large vessels); finally the manner of delivery is something of itself a forced delivery, insofar as it can easily lead to deep vaginal and cervico-uterine lacerations;

and also the child cannot always be extracted with the care necessary to save its life. For an especially large child the abdominal elytrotomy certainly cannot be applied large enough so that all of these dangers can be avoided. Hence to rely on the gastro-elytrotomy we must possess at least the following conditions; a broad vaginal sheath pulled high up with its lacunae under the pelvic girdle; an obliterated cervix; a soft os uteri, permeable to the hand; a small movable child. As to the method of delivery, turning and extracting only are suitable: the application of the forceps through the abdominal wound to the fetal head is contrary to the shape of the instrument in relation to the artificial birth canal.

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Now if in conclusion I as a decided advocate of the Classic Caesarean Operation grant that for technical reasons Porro's operation seems to be superior in certain indications, I cannot refrain from protesting against the following point of view which has been brought forward by Harris for a different division of the two operations. He maintains that the new method because of its results in Milan, Vienna, Paris, where the classic caesarean operation was almost always attended with unfortunate results, that this new method has surpassed the old method as a Hospital operation. But the results from American private practice are really so excellent that the new method must first show how it can produce better results; hence, for urban and rural practice the old method is to be preferred as by far the simpler. But now the anti-septic era has as good as abolished the former difference between hospital and private practice; our German obstetric and gynecological clinics, with their most complete first rate equipment and with their ever lowering rate of infant mortality, offer as favorable conditions as those of private practice in the city, and infinitely more favorable conditions than rural practice which often labors in the most primitive, insufficient and unwholesome conditions. When therefore Harris points out in concise admirable language what results could be ob-

tained by improvements in the classic Caesarean operation as a result of the antiseptic method, we do not see why this is not also applicable to institutions.

Therefore I consider the Porro operation only indicated when;

1. The draining of the secretions per vias naturales is rendered difficult or impossible, that is; in stenoses and atresiae of the cervix and the vagina; or in the displacement of the soft genital passage by a tumor outside of the uterus.
2. In pregnancy in the closed half of a uterus bicornis, where the removal of the false application is to be preferred to an opening in the open half. (Strictly speaking no real Porro operation since the half of the uterus which is left behind can again become impregnated. Compare the cases of Salin and Litzmann-Werth).
3. If infection of the Corpus Uteri is assumed, under the hypotheses made above.
4. After repeated classic caesarean operation.
5. In severe general osteomalacia.

For the first three indications only the extraperitoneal treatment of the stump would be appropriate, for the last two the intraperitoneal treatment of the stump. So I think I have shown what the (classical) Caesarean and what Porro's operation are. The classic Caesarean operation overcame a period of discredit in the last century coming again splendidly to the front. Let us hope that it will also overcome the crisis which has now befallen it, due to the competition of Porro's operation. May the classic Caesarean operation go forward with truly classic perfection.

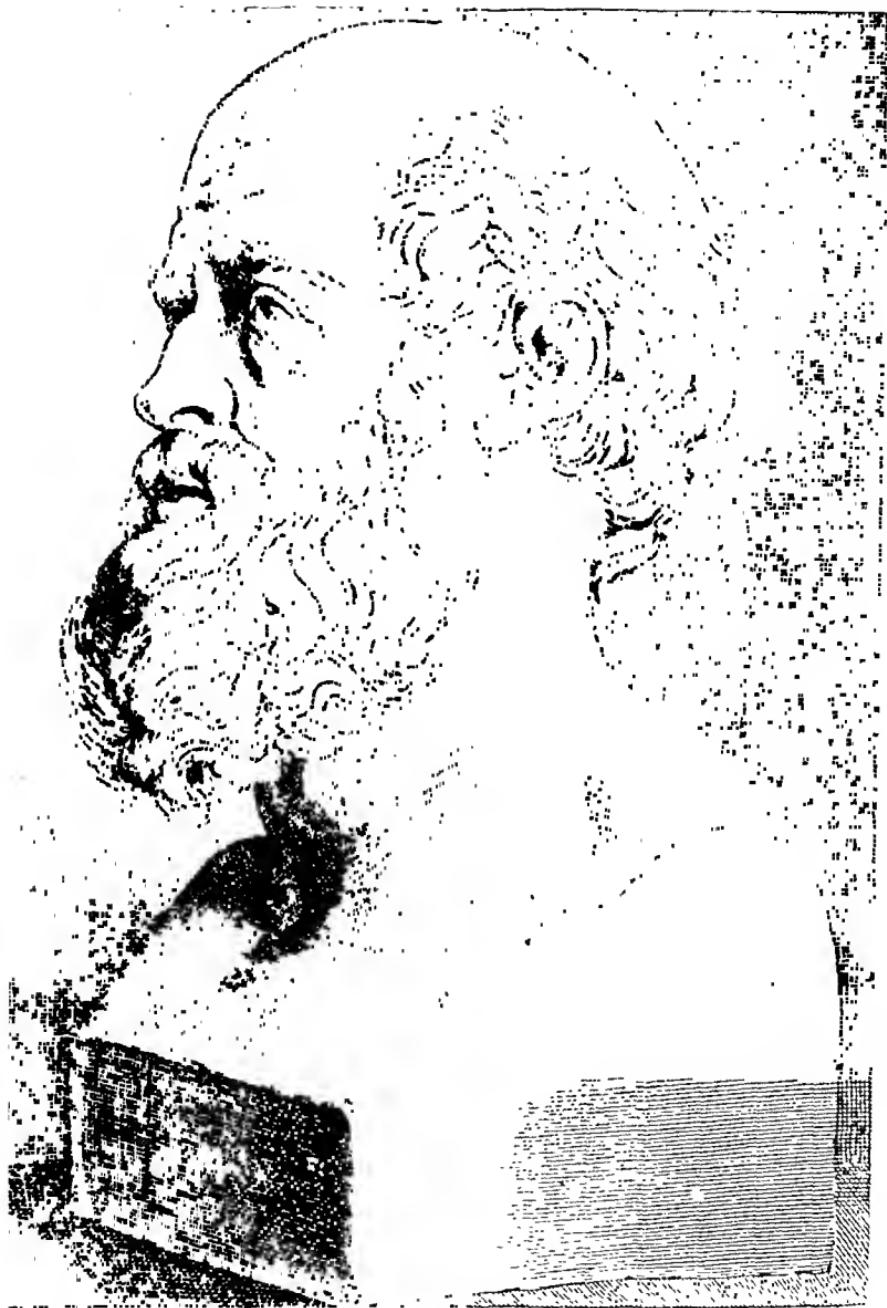
CHAPTER FIVE

PUERPERAL INFECTION

FOREWORD

THE CONTROVERSY regarding priority in the discovery of the cause of puerperal fever seems to have rivaled in an able manner that concerning the discovery of anaesthesia. One biographer writes "to Gordon of Aberdeen (1795) must be ascribed the credit of having first clearly demonstrated the infective nature of puerperal fever" while another says with equal ardor "we cannot but think that Gordon has been unduly praised by patriotic friends equally unacquainted with his real opinions and the value of his one contribution to obstetric literature." That such controversy is futile and serves no useful purpose will be realized by anyone who reads the remarkable essays of Gordon, White, Holmes and Semmelweiss, and by so doing arrives at what is a reasonable conclusion namely, that these men form an historically important group which cannot be separated.

What a privilege it is to be able to include Pasteur under this subject. His great contribution to the etiology of puerperal infection will always serve to enshrine him in the hearts of obstetricians.



HIPPOCRATES HIRACLIDI E. COVS.
F. marmore italiano

Carlo Lanza G.

HIPPOCRATES

Hippocrates · 460-370 B.C.

THE REAL origin of Obstetrics extends backward to the beginnings of the human race. The medical historian, in his search for beginnings however, follows a worn path to the Hippocratic writings. Historians seem to be quite agreed that we cannot speak of the "Works of Hippocrates" in the same way that we do the "Works of Galen." It seems impossible to say how much of the material actually came from Hippocrates' own hand. However, it is probable that he was the first writer, among the Greeks whose writings have come down to us, who wrote on gynecology. Hippocrates is supposed to have been born about 460 b.c. and Adams suggests that because of the wandering life that he led that he was prevented from giving much time to obstetrics and gynecology. His writings however show his interest in the disorders of women, especially such subjects as menstruation, sterility, pregnancy symptoms, and puerperal diseases. The selections here reproduced will give us some idea of the knowledge of Hippocrates concerning obstetrics and gynecology.

A CASE OF PUERPERAL FEVER*

Epidemics, Book 1. Case iv.

In Thasus, the wife of Philinus gave birth of a daughter; the lochial discharge was normal, and everything else was proceeding quietly, when, on the fourteenth day after delivery, she became feverish and had a rigor. There was pain at first in cardiac region of stomach and right abdomen. Pains in genital organs. Lochial discharge stopped. On the application of a pessary these symptoms were alleviated, but pains continued in the head, neck, and loins. No sleep; extremities cold; thirst. Bowels in overheated condition; scanty stools. Urine thin, and at first colourless.

Sixth day. At night she was very delirious; then came to once more.

Seventh Day. Thirsty; stools scanty, bilious, high coloured.

Eighth Day. Had a rigor; acute fever; many painful spasms; very delirious. On application of a suppository, she rose to

* Brock, A. J. *Greek Medicine*. 1929. London, p. 82.

stool, and had a copious motion, with bilious flux. No sleep.

Ninth Day. Convulsions.

Tenth Day. Mind slightly clearer again.

Eleventh Day. Slept; complete return of memory, but mind soon wandered again. She passed a large quantity of urine, accompanied by convulsions—her attendants seldom reminding her; this was thick and white, such as one sees when urine with sediment is shaken; but after standing for a long time it formed no sediment: in colour and consistence it resembled the urine of cattle. Such then was the urine which she passed, as I myself saw. On the fourteenth day there was twitching all over the body; much rambling talk; a short lucid interval, then quickly delirium again. On the seventeenth day she became speechless, and on the twentieth she died.



OBSTETRICAL AXIOMS*

- Sec. iv, 1. We must purge pregnant women, if matters be turgid, from the fourth to the seventh month, but less freely in the latter; in the first and last stages of pregnancy it should be avoided.
- Sec. v, 30. It proves fatal to a woman in a state of pregnancy, if she be seized with any of the acute diseases.
- 31. If a woman with child be bled, she will have an abortion, and this will be more likely to happen, the larger the foetus.
- 34. When a pregnant woman has a violent diarrhea, there is danger of her miscarrying.
- 37. In a pregnant woman, if the breasts suddenly lose their fullness, she has a miscarriage.
- 43. If erysipelas of the womb seize a woman with child, it will probably prove fatal.
- 49. To procure the expulsion of the secundines, apply a sternutatory, and shut the nostrils and mouth.

* Adams, Francis. *The Genuine Works of Hippocrates.* 1886, New York.

60. If a woman with a child have her courses, it is impossible that the child can be healthy.
61. If a woman's courses be suppressed, and neither rigor nor fever has followed, but she has been affected with nausea, you may reckon her to be with child.

★ ★ ★ ★ ★

Alexander Gordon · 1752-1799

"To GORDON of Aberdeen" writes A. W. W. Lea "must be ascribed the credit of having first clearly demonstrated the infective nature of puerperal fever." It was half a century after Gordon's essay that Oliver Wendell Holmes said of him "his expressions are so clear, his experience is given with such manly distinctness and disinterested honesty, that it may be quoted as a model which might have been often followed with advantage."

Alexander Gordon was born in the parish of Strachan near Aberdeen in 1752. He took a Master of Arts degree from Marischal College, Aberdeen, and soon after began the study of medicine, first at the Aberdeen Infirmary and later at the University of Edinburgh. Three years after graduation, during which time he served as Surgeon's Mate in the Royal Navy, he was enrolled as a pupil at the Lying-in Hospital on Store Street in London. At this time he also attended lectures by Denman, Osborn, Thynne and Justamond. Gordon also served for a time at the Middlesex Lying-in Dispensary and the Westminster Hospital. On his return to Aberdeen he received from his alma mater the degree of Doctor of Medicine. Very shortly he was appointed physician to the dispensary and for ten years directed that institution. In his private practice he devoted himself particularly to obstetrics and in addition gave an annual course of lectures to medical students. Gordon's famous treatise was published in 1795. Shortly after this he was again called to active duty by the admiralty and it was while in this service that he contracted tuberculosis, was invalided home and died in his brother's home in Logie on the 19th of November, 1799. His devotion and sincerity to his thesis is strikingly shown in the introduction to the slender volume which has im-

A

T R E A T I S E

ON THE

EPIDEMIC PUERPERAL FEVER

OF

A B E R D E E N.

BY

ALEXANDER GORDON, M.D.

PHYSICIAN TO THE DISPENSARY.

LONDON :

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1795.

TITLE PAGE—GORDON'S ESSAY
In possession of Yale University Library.

mortalized his name. He writes, "The observations which I have to offer, are of the utmost importance to society, and I am only diffident of my ability to express them in the manner they deserve. I have however made an attempt, which, I hope, will meet with a favorable reception from the public; especially, as I have advanced no opinion that is not an obvious conclusion, immediately resulting from facts, and as all the facts may be depended on."

ON THE EPIDEMIC PUERPERAL FEVER*

That the Puerperal Fever is of the nature of erysipelas, was supposed by Peatau forty years ago, and has been the opinion of Doctors Young and Home, of Edinburgh, since that time. I will not venture positively to assert that the Puerperal Fever and Erysipelas are precisely of the same specific nature; but that they are connected, that there is an analogy between them, and that they are concomitant epidemics, I have unquestionable proofs. For these two epidemics began in Aberdeen at the same time, and afterwards kept pace together; they both arrived at their acme together, and they both ceased at the same time.

That the erysipelas accompanied the epidemic disease of lying-in women, of the years 1787 and 1788, described by Dr. Clarke of London, appears from the following words: "Inflammatory diseases have been extremely 'unfrequent,' or, if they have occurred, they have been principally of the erysipelatous kind.**

The analogy of the Puerperal Fever with Erysipelas, will explain why it always seizes women after, and not before delivery. For, at the time when the erysipelas was epidemic, almost every person, admitted into the hospital of this place, with a wound, was, soon after his admission, seized with erysipelas in the vicinity of the wound. The same consequence followed the operations of surgery: and the cause is obvious;

* Gordon, A. *A Treatise on the Epidemic Puerperal Fever of Aberdeen.*

** See Dr. Clarke on the Epidemic Diseases of Lying-in Women, p. 11. 1795. London.

for the infectious matter, which produces erysipelas, was, at that time, readily absorbed by the lymphatics, which were then open to receive it.

Just so with respect to the Puerperal Fever; women escape it till after delivery, for, till that time, there is no inlet open to receive the infectious matter which produces the disease. But, after delivery, the matter is readily and copiously admitted by the numerous patulous orifices, which are open to imbibe it, by the separation of the placenta from the uterus.

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The dissections which I made prove, that the Puerperal Fever is a disease which principally affects the peritonaeum and its productions, and the ovaria.

The peritonaeum, or investing membrane of the abdomen, was inflamed; and the extensions, or productions, of the same membrane, which constitute the omentum, mesentery, and peritoneal coat of the intestines, were all promiscuously affected.

In all the subjects which I dissected, the right ovary was diseased, and the left sound. Now it may be asked, was this accidental, or was there some other reason for it? I observed, that in all the three cases, that ovary was affected, in which impregnation had taken place.

Does the disease universally fix upon that ovary in which conception had taken place, or is the right ovary more commonly affected than the left, from some cause not yet discovered?

I would therefore recommend this matter to the observation of future dissectors.

Thus I have proved that the Puerperal Fever is an inflammatory disease, and that its seat is in the abdomen; it may, therefore, be considered as consisting in abdominal inflammation.

That the cause of this disease was a specific contagion, or infection, I have unquestionable proof.

When the Puerperal Fever is frequent and fatal, that is,

when it prevails as an epidemic, its cause has been referred to a noxious constitution of the atmosphere.*

But that the cause of the epidemic Puerperal Fever under consideration was not owing to a noxious constitution of the atmosphere, I had sufficient evidence; for, if it had been owing to that cause, it would have seized women in a more promiscuous and indiscriminate manner. But this disease seized such women only, as were visited, or delivered, by a practitioner, or taken care of by a nurse, who had previously attended patients affected with the disease.

In short, I had evident proofs of its infectious nature, and that the infection was as readily communicated as that of the small-pox, or measles, and operated more speedily than any other infection, with which I am acquainted.

With respect to the physical qualities of the infection, I have not been able to make any discovery; but I had evident proofs that every person, who had been with a patient in the Puerperal Fever, became charged with an atmosphere of infection, which was communicated to every pregnant woman, who happened to come within its sphere. This is not an assertion, but a fact, admitting of demonstration, as may be seen by the perusal of the foregoing table.

The midwife, who delivered No. 1 in the table, carried the infection to No. 2, the next woman whom she delivered. The physician, who attended No. 1 and 2, carried the infection to No. 5 and 6, who were delivered by him, and to many others. The midwife, who delivered No. 3 carried the infection to No. 4; from No. 24 to No. 25, 26, and, successively, to every woman whom she delivered. The same thing is true of many others, too tedious to be enumerated.

It is a disagreeable declaration for me to mention, that I myself was the means of carrying the infection to a great number of women. But, happily, before I knew that the disease was infectious, I had discovered a remedy which would certainly cure it, if early applied. This discovery was a consolation, which, in a great measure, compensated for the uneasi-

* See Leake on the Puerperal Fever, p. 97.

ness which the knowledge of the above-mentioned fact would have otherwise occasioned.

* * *

That fresh air and cleanliness are insufficient for the destruction of contagion, and that there is no certain antidote but fire and smoke, it has been demonstrated by the ingenious Dr. Lind. This excellent author has proved, that fire and smoke are the most powerful agents for annihilating infection, and, as he thinks, even the plague itself.

The methods which he recommends for the purification of infected chambers, and for the fumigation of infected apparel, may be seen by perusing his ingenious papers on fevers and infection, to which I refer the reader.

The same means ought to be practised, for preventing the infection of the Puerperal Fever. The patient's apparel and bed-clothes ought, either to be burnt, or thoroughly purified; and the nurses and physicians, who have attended patients affected with the Puerperal Fever, ought carefully to wash themselves, and to get their apparel properly fumigated, before it be put on again.

* * * * *

Charles White • 1728-1813

CHARLES WHITE was born in Manchester in October 1728. He was the son of Dr. Thomas White, a practitioner and doctor to the town poor. Even as a boy he is said to have assisted his father in his midwifery practice. At the age of 20 Charles White "went up" to London for his medical education. He attended William Hunter's lectures and became a close friend to John Hunter, who was his same age. At the age of 24 he returned to Manchester, undertaking the foundation of a small hospital, which in three years expanded to a new building with 40 beds and which is now one of the great British institutions, The Royal Infirmary at Manchester. In 1762 Charles White was elected to the Royal Society and in the same year became a member of the Corporation of Surgeons. Charles White comes down to us however as a great

obstetrician. In 1773 he published his *Treatise on the Management of Pregnant and Lying-in Women*, which in 20 years went through five editions in England, was translated into French and German, and was reprinted at Worcester, Mass., in 1793. White's name is important not alone because of his contributions to our



CHARLES WHITE (1728-1813)

From a print in the library of the Royal Society of Medicine. From H. R. Spencer: *History of British Midwifery*.

knowledge of puerperal fever but because he was the first to recognise and fully describe in 1784 as an entity "white leg," which he later called "Phlegmatia alba dolens puerparum." In his *Treatise* White gives meticulous instructions for the management of the pregnant and parturient woman, stressing particularly the values of proper clothing, diet, exercise, fresh air, and

cold baths. He recommends a policy of watchful waiting in normal cases, waiting until cord pulsation ceases before ligation. His treatment of the third stage is distinctly modern compared with his contemporaries. Puerperal fever he states comes from one of two causes, a putrid atmosphere or too long confinement of the patient in the horizontal position. His treatment of the condition by maintaining a proper position of the patient for correct uterine drainage combined with strict cleanliness and isolation forms almost the entire basis of our treatment today. White continued to be active in his profession until the age of eighty-two, when he retired. He died in February, 1813.

THE TREATMENT OF PUERPERAL FEVER*

When the woman is in labour, she is often attended by a number of her friends in a small room, with a large fire, which, together with her own pains, throw her into profuse sweats; by the heat** of the chamber, and the breath of so many people the whole air is rendered foul, and unfit for respiration†; this is the case in all confined places, hospitals, jails, and small houses, inhabited by many families, where fevers are apt to be generated, and proportionately the more so where is the greatest want of free air.

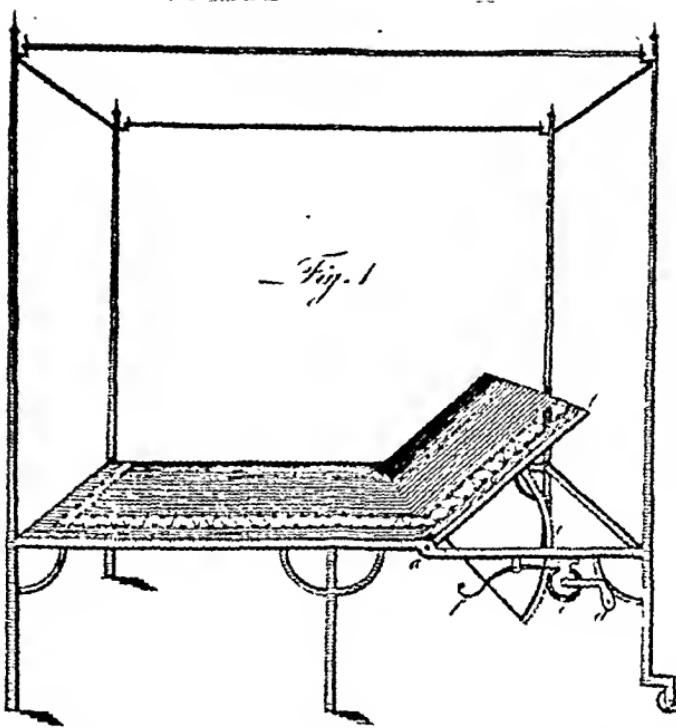
If the woman's pains be not strong enough, her friends are generally pouring into her large quantities of strong liquors, mixed with warm water, and if her pains be very strong, the

* White, Charles. *Treatise on the Management of Pregnant and Lying-in Women.* 1793, Worcester, Mass.

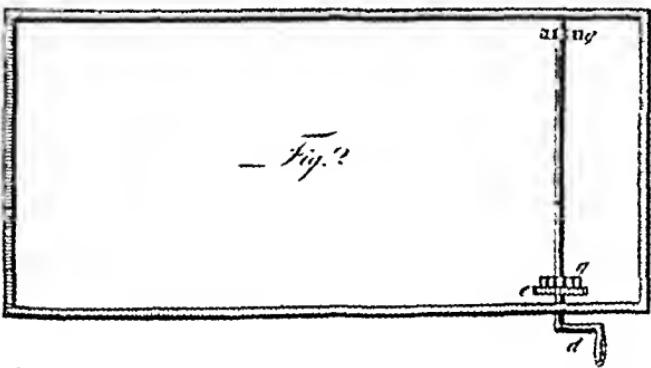
** Dr. Thomas Cooper, speaking of the lochial fever, says, "This fever is most common, and also more fatal in the hotter months." *Compend. of Midwifery,* p. 220, Lond. 1766.

† It has been found by Dr. Stephen Hales (*Statistical Essays*, Vol. 2, p. 324) that a person in health destroys two gallons of air in two minutes and a half, so as to render it unfit for respiration.

Dr. Percival informs me that a correspondent of his, (a gentleman distinguished for his knowledge of Natural and Experimental Philosophy) has lately discovered "That air which animals have breathed is in all respects the same with air in which animals have putrified. The original quantity is equally diminished in both cases; which is found to be owing, in part at least, to the precipitation of the fixed air it contained and they are restored by the same process. One use of the lungs therefore must be to carry off a putrid effluvium, without which a living body might perhaps putrify, as well as a dead one."



— Fig. 1



— Fig. 2

ILLUSTRATION FROM WHITE'S *Treatise*

same kind of remedy is made use of to support her. As soon as she is delivered, if she be a person in affluent circumstances, she is covered up close in bed with additional clothes, the curtains are drawn round the bed, and pinned together, every

crevice in the windows and door is stopped close, not excepting even the key hole, the windows are guarded not only with shutters and curtains, but even with blankets, the more effectually to exclude the fresh air, and the good woman is not suffered to put her arm, or even her nose out of bed, for fear of catching cold. She is constantly supplied out of the spout of a teapot with large quantities of warm liquors, to keep up perspiration and sweat, and her whole diet consists of them. She is confined to a horizontal posture for many days together, whereby both the stools and lochia are prevented from having a free exit. This happens not only from the posture of the patient, but also from the great relaxation brought on by warm liquors and the heat of the bed and room, which prevent the over distended abdominal muscles from speedily recovering their tone, whereby they are rendered unable to expel the contents of the abdomen, which lodging in the intestines many days, become acrid and quite putrid.

The lochia stagnating in the womb, and in the folds of the vagina, soon grow acrid, for it is well known that the mildest humours in the human body, if suffered to stagnate, become so, as soon as the air has access to them. These are in part absorbed by the lymphatics in the womb and vagina, and the effluvia from them help to make the air in the bed, and in the room, more putrid; this air in every act of inspiration is taken into the lungs, and is there again received into the circulation: Add to this that women are generally of a lax, seldom of a rigid fibre, owing in some measure to their periodical evacuations, to their sedentary, inactive, and domestic ways of life, and likewise to their muscles being surrounded with a much larger quantity of cellular membrane, than those of men; hence also they arrive at their acme sooner than men.

Amongst the poor people who live in cellars, and upon clay ground floors, the air is still made worse by the dampness and closeness of their houses, and the want of clean linen, and cleanliness in general. Those who live in garrets are also in no better a situation, for the putrid miasmata of several

families inhabiting the lower part of the house, ascend to them, already suffering perhaps from the effluvia of a whole family in every single room, the putridity of which is farther increased, by the heat of the sun piercing through the covering of the house; nor is to be wondered at that they are still in a worse situation in hospitals, where a number are crowded, not only in one house, but in one ward, where the disease is conveyed from one to another by the putrid miasma lodging in the curtains, bed clothes, and furniture, and by the necessary houses, which are either contiguous to, or so near the hospital as to occasion a most disagreeable smell, and must of course convey that infection which cannot be more effectually communicated, than by the excrements.



OF THE PREVENTION OF THE PUERPERAL, MILIARY, AND MILK FEVERS

As soon after the woman is delivered as it can be conveniently done, clean linen should be put about her, she should be left to the most perfect quiet of body and mind, that she may, if possible, get some sleep. The child should be removed into another room, and no visitors, or other persons, except such as are absolutely necessary, should be allowed to enter the patient's chamber. A number of people, besides preventing repose, foul the air, and render a frequent supply necessary. From hence appears the disadvantage of a small apartment. Where the patient has it in her option, I would recommend a large lofty room upon the first chamber floor, and could with it (if in summer) to have a northern aspect, but if that cannot be had, there should be window blinds placed on the outside of the windows, for when they are on the inside, they do not answer the purpose of keeping out the heat of the sun. In this room there ought to be no fire in summer, and little or none in winter whilst the patient is in bed, unless she has been used to sleep constantly with one in her chamber; for though fires are undoubtedly of the greatest

service in keeping up a circulation of air, yet at the same time a constant fire in a small room, when the person has not been accustomed to one, may overheat the patient. This I know will be objected to by the nurses, upon their own account, especially if they be to wake, but waking is what I do not approve, except on the first night, and then only if the delivery be late in the evening. It will disturb the patient much less if the nurse have a small bed in the room, but I would by no means suffer the child to remain there, if accommodations can possibly be had for it in any other part of the house. The patient should not be disturbed in the night, either upon pretence of giving her liquid or solid nourishment. If either be necessary, she will naturally of herself demand it.

Much mischief is often done by binding the belly too tight*. If there be any occasion for support, a thick napkin pinned very slightly round the waist, is all that is absolutely necessary, and the sooner this is disused the better. But if there really were occasion for strong compression, the common methods would be extremely inadequate. The compression must necessarily be unequal, the large hip bones of women effectually preventing such means as these from making an equal pressure upon every part of the uterus.

The thick fustian waistcoats and petticoats usually worn during the lying in, are much too warm. In the whole article of dress and bed clothes, nothing should be added to what the patient has been accustomed to in perfect health.

In a few hours after delivery, as soon as the patient has had a little rest, she should sit up in bed, with a bed gown thrown over her shoulders. If she propose to suckle the child, it should now be laid to her breast, whether there are signs of milk or no. This should be repeated four or five times a day, but in the night it is not necessary either that the breast should be administered, or that any kind of food should be given to the infant.

* "This disease (the puerperal fever) it must be acknowledge, may follow a labour under the best circumstances, but endeavours to dilate the os internum, and too hasty a separation of the placenta will produce it, and binding the abdomen tight after delivery." Denman on the puerperal fever, p. 18.

The patient should lie very high with her head and shoulders, and should sit up in bed many times in a day, especially when she takes her food, and as often as she suckles her child, and should kneel whenever she has occasion to make water, which should be often done.

This frequent upright posture is of the utmost consequence, and cannot be too much enforced. It prevents the lochia from stagnating, the stools and urine from being too long retained, and promotes the contraction of the uterus, together with that of the abdominal muscles.

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The chamber door, and even the windows, if the weather be warm, should be opened every day. There should be no board or other contrivance to stop the chimney, on the contrary, it should be quite open, that it may act as a ventilator. The curtains should not be close drawn, that the effluvia may have the liberty of escaping. Carpets are very useful, as they render washing the room unnecessary, for moisture ought as carefully to be avoided as heat or cold, therefore it ought not to be washed upon any account as long as the patient stays in it. The room should be brushed, and the carpets taken out every day, to be cleaned and aired.

The lying in chamber should in every respect be as sweet, as clean, and as free from any disagreeable smell, as any other part of the house. The patient should often be supplied with clean linen, for cleanliness, and free, pure, and in some cases cool air, are the greatest necessaries in this situation; and, upon the strictest examination, it appears even to me that there never was a miliary eruption produced without a sweat, nor a puerperal fever without either foul air, an accumulation of excrements in the intestines, or confinement of the patient to an horizontal position, thereby occasioning a stagnation and an absorption of acrid matter, except in cases where violence had been used, either in dilating the os internum, or in the delivery of the child or the placenta, or from some very great imprudence.

The sooner she gets out of bed after her delivery, the better; even on the same day if possible; she should not defer it beyond the second or third at the farthest, and then if it be winter time, it will be necessary to have a fire.

Clean, well aired sheets, should now be laid upon the bed, but by no means such as have been lain in since their washing.

If the patient have not every day a stool, one ought daily to be procured. Clysters are very proper; they will not only procure stools, but by passing along the arch of the colon, act as fomentations to the whole abdomen, without any griping or other disagreeable commotions.

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That a horizontal position should promote that absorption of matter which I consider as in great measure the cause of puerperal fevers, will appear probably from various considerations. The weight of the uterus in this posture carries it close to the vertebrae, and causes its sides to approach each other, so as to render its figure flatter; by which means its contraction must be impeded, and consequently the expulsion of its contents retarded. The discharge of the lochia, too, is not, in this case, assisted by gravitation; hence they will be apt to lodge and stagnate in the transverse rugae of the vagina. Whereas an upright position produces effects the contrary to these. The uterus forwards upon the soft parietes of the abdomen, will meet with no obstacle to its contraction; and the lochial discharges, finding a ready exit by a depending orifice, will drain off as soon as they have acquired sufficient fluidity.

*Oliver Wendell Holmes · 1809-1894*

OLIVER WENDELL HOLMES was called by Osler "The most successful combination which the world has ever seen of the physician and the man of letters." Holmes great contribution to Obstetrics was his essay on *The Contagiousness of Puerperal Fever* which

appeared first in 1843 and was subsequently reprinted in 1855. The evidence which Holmes set forth in his extraordinary and logical argument was gathered from facts supplied by professional colleagues. The Holmes essay seems remarkable today when we realize that at the time it was written the science of Bacteriology was then unborn. For many years the *Autocrat of the Breakfast Table* was Parkman Professor of Anatomy and Physiology at the Harvard Medical School and many medical essays and addresses came from his pen. However, his only scientific work of first importance is the essay here in part reproduced. The first appearance of the essay on puerperal fever was in the now forgotten and obscure *New England Quarterly Journal of Medicine and Surgery*. It was not until ten years later that the opposition to his theories reached their climax and which resulted in Holmes republication of the essay under the title *Puerperal Fever as a Private Pestilence*.

THE CONTAGIOUSNESS OF PUERPERAL FEVER*

The practical point to be illustrated is the following: The disease known as puerperal fever is so far contagious as to be frequently carried from patient to patient by physicians and nurses.

Let me begin by throwing out certain incidental questions, which, without being absolutely essential, would render the subject more complicated, and by making such concessions and assumptions as may be fairly supposed to be without the pale of discussion.

1. It is granted that all the forms of what is called puerperal fever may not be, and probably are not, equally contagious or infectious. I do not enter into the distinctions which have been drawn by authors, because the facts do not appear to me sufficient to establish any absolute line of demarcation between such forms as may be propagated by contagion and those which are never so propagated. This general result I shall only support by the authority of Dr. Ramsbotham, who gives, as the result of his experience, that the same symptoms belong to what he calls the infectious and the sporadic forms of the disease, and the opinion of Arm-

* Holmes, O. W. *Puerperal Fever as a Private Pestilence*. Boston, 1855.

strong in his original Essay. If others can show any such distinction, I leave it to them to do it. But there are cases enough that show the prevalence of the disease among the patients of a single practitioner when it was in no degree epidemic, in the proper sense of the term. I may refer to those of Mr. Robertson and of Dr. Peirson, hereafter to be cited, as examples.

2. I shall not enter into any dispute about the particular mode of infection, whether it be by the atmosphere the physician carries about him into the sick-chamber, or by the direct application of the virus to the absorbing surfaces with which his hand comes in contact. Many facts and opinions are in favor of each of these modes of transmission. But it is obvious that, in the majority of cases, it must be impossible to decide by which of these channels the disease is conveyed, from the nature of the intercourse between the physician and the patient.

3. It is not pretended that the contagion of puerperal fever must always be followed by the disease. It is true of all contagious diseases that they frequently spare those who appear to be fully submitted to their influence. Even the vaccine virus, fresh from the subject, fails every day to produce its legitimate effect, though every precaution is taken to insure its action. This is still more remarkably the case with scarlet fever and some other diseases.

4. It is granted that the disease may be produced and variously modified by many causes besides contagion, and more especially by epidemic and endemic influences. But this is not peculiar to the disease in question. There is no doubt that smallpox is propagated to a great extent by contagion, yet it goes through the same periods of periodical increase and diminution which have been remarked in puerperal fever. If the question is asked how we are to reconcile the great variations in the mortality of puerperal fever in different seasons and places with the supposition of contagion, I will answer it by another question from Mr. Farr's letter to the Registrar-General. He makes the statement that "five die weekly of smallpox in the metropolis when the disease is not

epidemic," and adds, "The problem for solution is, Why do the five deaths become 10, 15, 20, 31, 58, 88, weekly, and then progressively fall through the same measured steps?"



OLIVER WENDELL HOLMES (1809-1894)
From Thoms' *Chapters in American Obstetrics*.

5. I take it for granted that, if it can be shown that great numbers of lives have been and are sacrificed to ignorance or blindness on this point, no other error of which physicians

or nurses may be occasionally suspected will be alleged in palliation of this; but that whenever and wherever they can be shown to carry disease and death instead of health and safety, the common instincts of humanity will silence every attempt to explain away their responsibility.



I have no wish to express any harsh feeling with regard to the painful subject which has come before us. If there are any so far excited by the story of these dreadful events that they ask for some word of indignant remonstrance to show that science does not turn the hearts of its followers into ice or stone, let me remind them that such words have been uttered by those who speak with an authority I could not claim.* It is as a lesson rather than as a reproach that I call up the memory of these irreparable errors and wrongs. No tongue can tell the heart-breaking calamity they have caused; they have closed the eyes just opened upon a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into the stranger's arms, or bequeathed it, with less cruelty, the death of its dying parent. There is no tone deep enough for regret, and no voice loud enough for warning. The woman about to become a mother, or with her new-born infant upon her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden or stretches her aching limbs. The very outcast of the streets has pity upon her sister in degradation when the seal of promised maternity is impressed upon her. The remorseless vengeance of the law, brought down upon its victim by a machinery as sure as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multiplied trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trust her life, doubly pre-

* Dr. Blundell and Dr. Rigby in the works already cited.

cious at that eventful period, should hazard it negligently, unadvisedly, or selfishly!

There may be some among those whom I address who are disposed to ask the question, What course are we to follow in relation to this matter? The facts are before them, and the answer must be left to their own judgment and conscience. If any should care to know my own conclusions, they are the following; and in taking the liberty to state them very freely and broadly, I would ask the inquirer to examine them as freely in the light of the evidence which has been laid before him.

1. A physician holding himself in readiness to attend cases of midwifery should never take any active part in the post-mortem examination of cases of puerperal fever.

2. If a physician is present at such autopsies, he should use thorough ablution, change every article of dress, and allow twenty-four hours or more elapse before attending to any case of midwifery. It may be well to extend the same caution to cases of simple peritonitis.

3. Similar precautions should be taken after the autopsy or surgical treatment of cases of erysipelas, if the physician is obliged to unite such offices with his obstetrical duties, which is in the highest degree inexpedient.

4. On the occurrence of a single case of puerperal fever in his practice, the physician is bound to consider the next female he attends in labor, unless some weeks at least have elapsed, as in danger of being infected by him, and it is his duty to take every precaution to diminish her risk of disease and death.

5. If within a short period two cases of puerperal fever happen close to each other, in the practice of the same physician, the disease not existing or prevailing in the neighborhood, he would do wisely to relinquish his obstetrical practice for at least one month, and endeavor to free himself by every available means from any noxious influence he may carry about with him.

6. The occurrence of three or more closely connected cases,

in the practice of one individual, no others existing in the neighborhood, and no other sufficient cause being alleged for the coincidence, is *prima facie* evidence that he is the vehicle of contagion.

7. It is the duty of the physician to take every precaution that the disease shall not be introduced by nurses or other assistants, by making proper inquiries concerning them, and giving timely warning of every suspected source of danger.

8. Whatever indulgence may be granted to those who have heretofore been the ignorant causes of so much misery, the time has come when the existence of a private pestilence in the sphere of a single physician should be looked upon, not as a misfortune, but a crime; and in the knowledge of such occurrence the duties of the practitioner to his profession should give way to his paramount obligations to society.



Ignaz Phillip Semmelweiss · 1818-1865

"IN THE whole History of Medicine" writes Sinclair "we find a record of only two discoveries of the highest importance in producing direct and immediate blessings to the human race by the saving of life and the prevention of suffering. These were the discoveries of Edward Jenner and Ignaz Phillip Semmelweiss."

Semmelweiss who was born at Buda, July 1, 1818, was educated at Pest and Vienna, receiving his medical degree in the latter place in 1844. In the same year he was appointed assistant professor in Midwifery under Johann Klein. At that time, particularly in maternity hospitals, the mortality was almost unbelievable. In Klein's clinic the rate rarely was under 5 per cent and between 1841 and 1843 of 5139 parturient women, 829 died, a death rate of 16 per cent. Semmelweiss was impressed by the fact that this rate prevailed only in the wards attended by students and not in the wards managed by the midwives in which the death rate was much lower. Semmelweiss says that it was the death of his friend Kolletschka from a dissecting wound that "revealed to my mind an identity" with the fatal puerperal cases. It was from this tragic

event that the beginning of the knowledge of the pathology of septicemia was made. Semmelweiss reasoned correctly that students carried infective material directly from the dissecting rooms to the delivery room. In 1847 he instituted the cleansing of the



IGNAZ PHILLIP SEMMELWEISS

(1818-1865)

From *Life of I. Semmelweiss*—J. W.
Sinclair, Manchester, 1909.

hands with chlorinated lime water and in a short time the mortality fell to 3.04 per cent and in the second year to 1.27 per cent, even surpassing the rate of the midwives. His superior Klein, however, largely through vanity and jealousy, remained uncon-

vinced and finally succeeded in driving Semmelweiss from Vienna in 1849. Semmelweiss fortunately was appointed Obstetric Physician in the Maternity Department at Pest and in six years reduced the mortality there to .85 per cent. The general controversy in medical circles which Semmelweiss' doctrine inaugurated was exceptionally bitter and as a tragic end to the conflict Semmelweiss went to an asylum in July, 1865, suffering from extreme mental disturbance. As soon as he entered this institution, it was discovered that he had a dissection wound of the right hand and a month later he died a victim of the very condition that he was the first to recognize.

It was in the autumn of 1857 that Semmelweiss resolved to publish a book on the subject which was his chief interest in life. In the introduction he says "The object of this *Treatise* is to set forth historically the observations made in the Clinic, and to explain how I began to doubt the truth of the prevalent teaching with regard to Puerperal Fever . . . fate has selected me as the champion of the Truth which is expounded in this *Treatise*, and there is a duty laid upon me which I cannot refuse to perform." The work was finished in August and published in October 1860 under the title *Die Aetiologie, der Begriff und die Prophylaxis des Kindbettfiebers*.

THE IMPORT OF CHILD-BED FEVER* (Begriff des Kindbettfiebers)

Supported by the experiences which I have collected in the course of fifteen years in three different institutions all of which were visited from time to time by puerperal fever to a serious extent, I maintain that puerperal fever, without the exception of a single case, is a resorption fever produced by the resorption of decomposed animal organic material. The first result of this resorption is a blood-dissolution; and exudations result from the blood-dissolution.

The decomposed animal organic material which produces child-bed fever is, in the overwhelming majority of cases, brought to the individual from 'without, and that is the in-

* Semmelweiss, I. P. *Die Aetiologie, der Begriff, und die Prophylaxis des Kindbettfiebers*, Pest, u. Leipzic, 1861.

fection from without; these are the cases which represent child-bed fever epidemics; these are the cases which can be prevented.

In rare cases the decomposed animal matter which when absorbed causes child-bed fever, is produced within the limits of the affected organism. These are the cases of self-infection, and these cases cannot all be prevented.

The source whence the decomposed animal organic material is derived from without is the cadaver of any age, of either sex, without regard to the antecedent disease, without regard to the fact whether the dead body is that of a puerperal or non-puerperal woman. Only the degree of putrefaction of the cadaver has to be taken into consideration. . . .

. . . At the Obstetric Clinic of the Faculty of Medicine at Pesth, it was physiologic human blood and normal lochia which were the etiological factor of a puerperal fever, inasmuch as they were left for a long time soaking the bed-linen and undergoing decomposition.

The carrier of the decomposed animal organic material is the examining finger, the operating hand, the bed-clothes, the atmospheric air, sponges, the hands of midwives and nurses which come into contact with the excrements of sick lying-in-women or other patients, and then come again into contact with the genitals of woman in labour or just confined; in a word the carrier of the decomposed animal organic material is everything which can be rendered unclean by such material and then come into contact with the genitals of the patient.

The site of infection by the decomposed animal organic material is the internal os uteri and upward from there. The inner surface of the uterus . . . is robbed of its mucosa and presents an area where absorption occurs with extreme readiness. The other parts of the mucosa are well clad with epithelium and do not absorb unless they are wounded. If it is injured any portion of the genitals becomes capable of absorption.

With regard to the time of infection, it seldom occurs dur-

ing pregnancy because of the inaccessibility of the inner absorbing surface of the uterus by reason of the closure of the os internum. In cases in which the internal os uteri is open during pregnancy infection may occur then, but these cases are rare because there is seldom any need for passing the finger within the "cervix uteri."

I neglected to take notes of the cases in which puerperal fever began during pregnancy at the First Obstetric Clinic of Vienna but I believe it to be near the truth if I put down the number of cases as about twenty. By puerperal infection the pregnancy was always interrupted . . .

The time within which infection most frequently occurs is during the stage of dilatation. This is owing to frequent examinations made with the object of ascertaining the position of the foetus.

A proof of this is that before the introduction of chlorine disinfection nearly all the patients after labour, protracted in the dilatation period, died of puerperal fever.

Infection seldom takes place during the expulsion stage because the surface of the uterus cannot then be reached.

In the third stage, or after-birth period, and during the puerperium, the inner surface of the uterus is accessible, and at this time especially, the atmospheric air loaded with decomposed animal organic materials may gain access to the internal genitals and set up infection . . .

In the after-birth period and during lying-in, the infection may be produced by the bed-linen coming into contact with the genitals which have been injured in the process of parturition. . . .

Self-infection: The decomposed animal organic material which when absorbed brings on puerperal fever is in rare cases not conveyed to the individual from without but originates within the affected individual owing to the retention of organic material which should have been expelled in child-bed. Before its expulsion decomposition has already begun, and when absorption occurs puerperal fever is produced

by Self-infection. These organic material are the lochia, remnants of decidua, blood coagula which are retained within the cavity of the uterus. Or the decomposed animal organic material is the product of a pathological process, for example, the result of a forcible use of the midwifery forceps causing gangrene of bruised portions of the genital organs and consequent child-bed fever by Self-infection.

When we declare that child-bed fever is a resorption fever in which as the result of absorption a blood-poisoning occurs, and then exudation follows, we do not imply that puerperal fever is peculiar to the lying-in woman and restricted in its incidence to lying-in women. We have met with the disease in pregnant women and in new-born infants without regard to sex. This is the disease which was fatal in the case of Kolletschka; and we find it affecting anatomists, surgeons, and patients who have undergone surgical operations.

Puerperal fever is therefore not a species of disease: puerperal fever is a variety of Pyaemia.

With the expression pyaemia different meanings are bound up: it is therefore necessary to explain what I mean by pyaemia. I understand by pyaemia a blood-poisoning, produced by a decomposed animal-organic matter.

A variety of pyaemia I call child-bed fever, because special forms of it occur in the genital sphere of pregnant parturient and puerperal women. . . .

Puerperal fever is not a contagious disease. By contagious disease we understand the sort of disease which itself produces the contagion by which it is propagated, and this contagion again produces in another individual the same disease. Smallpox is a contagious disease because smallpox produces the contagion by which smallpox can be reproduced in another individual. Smallpox produces in another individual smallpox and no other disease. . . . For example, a person suffering from scarlet fever cannot cause smallpox in another individual.

Such is not the position with childbed fever: this disease

can be produced in a healthy normal puerperal by a disease which is not puerperal fever. . . .

Puerperal fever is not conveyed to a healthy puerpera unless a decomposed animal-organic material is carried to her. For example, a patient becomes seriously ill with puerperal fever, and when this puerperal fever runs its course without the production of a decomposed animal-organic matter, which appears externally, then is the disease not conveyable to a healthy normal puerpera. But when puerperal fever runs its course in such a way as to produce a decomposed matter appearing externally, then is childbed fever capable of being conveyed to a normal healthy puerpera. For example, a puerpera is suffering from the malady in the form of septic endometritis . . . from such a patient is puerperal fever capable of being carried.

Puerperal fever is not a contagious disease, but puerperal fever is conveyable from a sick to a sound puerpera by means of a decomposed animal organic material.

After death the body of every lying-in woman becomes a source of decomposed material which may produce puerperal fever; in the cadaver of the puerpera we consider only the degree of putrefaction. When we have reflected that the overwhelming majority of cases of puerperal fever are produced by infection from outside, and that these cases can be prevented, and that in only a small minority of cases puerperal fever is the result of unavoidable self-infection, the question arises: if all fatal cases, not resulting from puerperal fever, and if all cases of infection from without are prevented by suitable measures, how many lying-in women die as the consequence of self-infection?

It is not possible to answer this question for want of statistics, and we must attain complete control of material and environment so as to banish conveyed infection from our hospitals before we can obtain reliable statistics of self-infection.



Louis Pasteur · 1822-1895

"PASTEUR," wrote M. Roux, "does not hesitate to declare that that microscopic organism is the most frequent cause of infection in recently delivered women. One day, in a discussion on puerperal fever at the Academy, one of his most weighty colleagues was eloquently enlarging upon the cause of epidemics in lying-in hospitals; Pasteur interrupted him from his place. 'None of those things cause the epidemic; it is the nursing and medical staff who carry the microbe from an infected woman to a healthy one.' And as the orator replied that he feared that microbe would never be found, Pasteur went to the blackboard and drew a diagram of the chain-like organism, saying: 'There, that is what it is like!' His conviction was so deep that he could not help expressing it forcibly. It would be impossible now to picture the state of surprise and stupefaction into which he would send the students and doctors in hospitals, when, with an assurance and simplicity almost disconcerting in a man who was entering a lying-in ward for the first time, he criticized the appliances, and declared that all the linen should be put into a sterilizing stove."*

THE CAUSE OF PUERPERAL FEVER**

M. Pasteur:

When, at the last session, I took the liberty of presenting some observations concerning the conclusions of Doctor Hervieux's lecture, I expressed the desire to have new opportunities for studying puerperal fever. Directly the next day, Doctor Hervieux, with very praiseworthy kindness for which I cannot too much thank him, agreed to allow me to make some observations whilst he was on duty at the Maternity Hospital.

A woman, confined for several days, was prey to a very well-defined puerperal fever; death was certain. It took place Sunday morning at 6 o'clock.

This woman's discharges, examined Wednesday, were very fetid. They were filled with various microbes, mobile or immobile, among which was to be found one especially, in great

* *The Life of Pasteur.* R. Vallery-Radot. New York, 1923, p. 291.

** Pasteur, L., Septicemic Puerperal. *Bulletin de l'Academie de Medicine.* Paris, 1879, p. 271.

quantity, namely: the organism with spheric grains associated by two's or four's, or forming the strings (chains) that I described at the last session. The blood gathered from a finger after a pin-prick revealed only in a doubtful manner the presence of that organism; but, imbedded in the midst of a culture, the blood showed a development of this same organism formed into pairs of grains or lines of grains, without any mixture of grains of a different nature.

Two new cultures from the blood were taken while she was still living, later at 7 hours, and at 32 hours after death.

These last two were made by a little drop taken from the foot, and by blood from the femoral vein. The result was the same. Development of the same organism in a pure state. At the autopsy, the pus of the uterus, of the tubes, and of the lymphatics of the uterus showed this organism, but associated with others in the form of points, of very small bacilli (batonnets), some of them mobile.

Mr. Maurice Raynaud was kind enough to send me some blood and discharges from a woman very seriously ill with puerperal fever. The discharges gave the same results as those from the woman in Maternity Hospital, of whom I have spoken. At Lariboisière Hospital, using every indispensable precaution of cleanliness, we got some blood from a vein in the thigh twenty hours after death; and by a puncture, we gathered a little pus from the peritoneal cavity. The culture of the blood showed the organism with little grains, and always without any association with other organisms, in cultures that had contact with the air or were in a vacuum. The pus of the peritoneum was filled with that organism in a line-like formation (*en chapelets*); the number of its grains was indeterminate, often reaching ten, twenty, thirty grains and more. There it was associated with it, the very small microbe to which I called attention in a former paper read in my name and in that of Mr. Joubert and Mr. Chamberland, as a very active generator of the pus; for this time the culture was no longer produced purely; that is to say, the organism with the

strings of almost spheric grains was found in association with the very small strangulated bacilli which I recall. This circumstance led us to cultivate the pus of the peritoneal cavity



LOUIS PASTEUR (1822-1895)

of the woman who died at Maternity Hospital as well. The result was the same as that for the woman dead at Lariboisière: that is, the culture produced the microbe in lines (chains)

of grains and the microbe which easily engenders pus; although, I repeat, in the two cases the blood in culture only gave one of these microbes, the one which forms in pairs or in strings of spheric grains.

I cannot insist too much here on the fact that the two microbes of which I have just spoken are among the most common; they are to be found everywhere. It is easy to extract them from ordinary waters (*eaux ordinaires*). Later on I shall explain what may appear to be strange in this statement, if you join to it that other affirmation that today the etiology of puerperal fever should be sought preferably in the presence of microscopic organisms associated with the pus.

At Maternity, we examined the discharges of two women delivered several days before and in a good state of health. The discharges had no sensible odor and contained no organisms which were visible under the microscope.

In summary, more perhaps even than at the last session, I am led to believe that we must direct our researches toward ascertaining the presence of microscopic organisms in puerperal fever, with the idea that they are probably the determinants of that very dangerous disease. The latter's symptoms and course will no doubt be explained in the same way by the variable nature of the microbes associated with the pus.

The pus, when it is pure, has, so to speak, no harmful effect on the body; for if you inject some pure pus into the jugular vein of a guinea-pig, the result is metastatic abscesses which are reabsorbed with the greatest of ease; but if the pus contains microscopic organisms which find an environment favorable to their development in the blood or in any other fluid of the body, the most serious accidents are liable to occur—accidents which vary according to the nature of the microbe or of the microbes associated with the globules of the pus. There is nothing which differs more, for example, than the diseases determined in animals by the organism with a string of grains, by the little organisms which easily engender pus, like the one I mentioned a while ago, and like still others

which can be found in ordinary waters; and the differences become even more sharply defined if you consider the infectious organisms such as the septic vibrio, the bacteridiae in the form of anthrax, and the microbe of barnyard animals (e.g. poultry). The words purulent infection, septicemia, bacterihemia, are generic terms. The varieties are very numerous, according to the *contagium vivum* which causes them to appear.

CHAPTER SIX

DEFORMITIES OF THE PELVIS

FOREWORD

THE DEFORMITIES of the bony pelvis, especially in the severer manifestations, must have been known and treated by many of those who delivered women down through the ages. However, our present day conception of these abnormalities dates from the time of Deventer (1701). He it was who published the first scientific exposition of the subject in an atlas showing deformities of the pelvis and their effects on the course of labor. The importance of his work is realised when we consider that it remained the chief work of authority for a century and a half until the time of Michaelis. Smellie, in 1752, in his *Midwifery* not only gave rules for recognizing the more usual deformities but described the mechanism of labor in such cases. Baudeloque (1789), whose name is perpetuated in Baudeloque's diameter, added to our knowledge of the subject and is important for his part in introducing methods for measuring the pelvis in the living woman. The modern conception of pelvic abnormalities dates from the work of Michaelis and Litzmann (1851). From that time on the greater part of the more important work seems to have been in the hands of German obstetricians, among whom Naegele, Schauta, Breus and Kolisko are among the most important.

William Smellie · 1697-1763

OF A DISTORTED PELVIS*

The pelvis, in decrepit women, is not always distorted, because the distortion of the spine, in many women, does not happen till the age of eight, ten, twelve, or fourteen; when,

[393]

THE THIRD TABLE

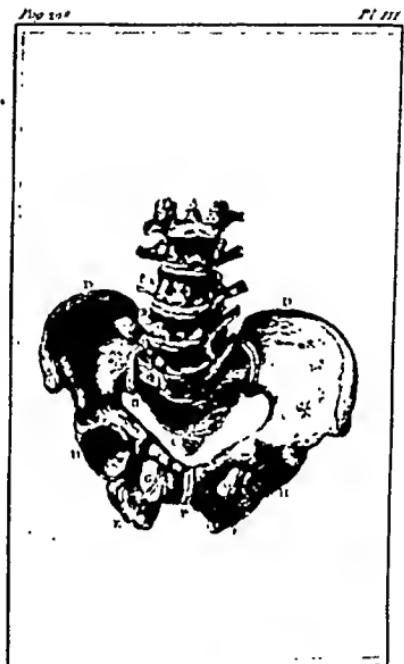
Exhibits a Front-View of a distorted Pelvis.

- A The five Vertebrae of the Loin.
- B The Os Sacrum.
- C The Os Cervix.
- D,D The Oss Ischia.
- E,E The Oss Ithae.
- F The Oss Pecten.
- G,G The Femuris Miges.
- H,H The Autetula.

From this Plate may appear the great danger incident to both Mother and Child when the *Pelvis* is distorted in this manner; it being only two inches and an half at the Brim from the posterior to the anterior part, and the same distance between the inferior parts of each *Os Ithae*. *Vide Tab. XXVII.* where the *Pelvis* is one quarter of an inch narrower at the Brim than this, but sufficiently wide below. Various are the forms of distorted Bisons, but the last mentioned is the most common. It is a great happiness however in practice that they are seldom so narrow, though there are instances where they have been much more so. The danger in all such cases must increase or diminish, according to the degree of distortion of the *Pelvis*, and size of the Child's head.

Vide Vol. I. Lib. t. Chap. I. Sect. 4, 5, and Vol. II. Coll. t. No. 3, 4, 5. Also Coll. st. 27, and 29.

THL



From W. Smellie. *A Treatise on the Theory and Practice of Midwifery.*
London, 1779

being tall and slender, it is occasioned by mismanagement in their dress, lying too much on one side, and other accidents; without having any effect upon the pelvis, the shape of which is by that time ascertained.

But most of those who have been ricketty in their infancy, whether they continue little and deformed, or, recovering of

* Smellie, W. A. *A Treatise on the Theory and Practice of Midwifery.* 3rd Ed. Corrected. London, 1756, p. 82.

that disease, grow up to be tall stately women, are commonly narrow and distorted in the pelvis; and consequently subject to tedious and difficult labours; for, as the pelvis is more or less distorted, the labour is more or less dangerous and difficult.

In ricketty children, the bones are soft and flexible; and as they cannot run about and exercise themselves like those of a more hardy make, the pelvis, in sitting upon stools or the nurse's knees, is by the weight of the head and body, often bent and distorted in the following manner:

The coccyx is pressed inwards towards the middle of the cavity of the pelvis; the adjacent or lower part of the sacrum is forced outwards, while the upper part of the same bone is turned forward with the last vertebra of the loins, approaching too near to the upper part of the pubes; so that the distance in some women, from the back to the fore-part of the brim, is not above three inches; in others, no more than two; and sometimes, though rarely, not above one inch and a half.

In others, the lower vertebra of the loins, with the upper end of the sacrum jet inwards and to one side: the ossa pubis, instead of being inwardly concave, are sometimes convex; and the lower part of each ischium so near to one another, that the distance, instead of four inches and one quarter, will not amount to more than three, and in some cases not so much.

Sometimes, the Vertebrae that compose the Sacrum ride one another, and form a large protuberance in that part, which ought to be concave; but the most common circumstance of distortion, is the jetting forward of the last Vertebra of the loins with the upper end of the Sacrum, forming a more acute angle with the spine; and in this part of the passage, the head most commonly sticks.



Jean Louis Baudeloque · 1746-1810

KNOWN FROM other physicians of the same name as "Le Grand Baudeloque," this celebrated French obstetrician contributed largely to our knowledge of the contracted pelvis, particularly in the diagnosis of the condition in the living woman. Baudeloque showed that many cases could be recognized by external pelvimetry and was the first to describe the external conjugate diameter



JEAN LOUIS BAUDELOQUE (1746-1810)

which is now generally known by his name. Jean Louis Baudeloque was born at Heilly, in the canton of Corby, department of the Somme, in 1746. He studied medicine at Paris, paying particular attention to anatomy, surgery and obstetrics. He became a pupil and friend of Solayres, whose principles and doctrines he adopted for his own. In 1776 he was admitted to the College of Surgeons after presenting a thesis on symphysiotomy. Baudeloque became the leading French obstetrician of his time and his honors, which were many, included his membership in the College and Academy of Surgery of Paris, Professor of Obstetrics at the Faculty

of Medicine at Paris, Professor at the Maternité, and many learned societies, national and foreign. Besides his many monographs and dissertations his principal works are *Principles of Obstetrics* and *The Art of Delivery*, both of which went through numerous editions, and were translated in many languages. The transcription here given from Baudeloque's *L'art des Accouchemens* describes in a splendid manner his methods of examination of the bony pelvis in the living subject.

THE EXTERNAL CONJUGATE DIAMETER*

130. In order to determine how defective the superior strait is in the direction indicated and to measure its diameter by means of this species of compass, one ascertains the thickness of the woman from the middle of the mons Veneris to the centre of the depression of the base of the sacrum posteriorly by placing one of the tips of the instrument in front at the height of the symphysis of the pubis and the other tip in back a little below the spinous tubercle of the last lumbar vertebra; and in dealing with thin women one deducts three inches of this thickness, to allow both for the thickness of the base of the sacrum and for the anterior end of the os pubis, since the thickness of the latter is at most merely half an inch and that of the base of the sacrum two and one half inches, and is so constantly thus that out of thirty to thirty-five pelvis defective and contracted in every possible way and to every possible degree I did not find a single case where the difference amounted to one twelfth of an inch. This subtraction of three inches from the outer thickness of the pelvis in the direction mentioned is still sufficient if the patient is moderately fat; and when the obesity is excessive one adds on one or two twelfths of an inch because the fats which form the greatest projection of the mons Veneris readily give way when pressed by the lenticular extremity of the legs of the compass. The result of this process is so exact that the pelvis, when measured at necropsy with the ordinary compass checked with the foot-rule, was not in any of my experiments more than one twelfth

* *L'art des accouchemens*. New edition. Paris: Desprez and Méquignon. 1789. v. 1.

of an inch greater or less than the estimation that I had made of it. Greater precision, even if it could be obtained, would be useless, since the choice of the best means to terminate delivery in specific cases cannot be settled by the fact that the diameter of the pelvis is one twelfth of an inch larger or smaller. On the strength of these data this diameter is easily gauged. It amounts to four inches when the external thickness of the pelvis measures seven inches between the legs of the compass; it is merely three inches when the external thickness is only six, and just two inches when the external thickness does not exceed five inches, and so on. We suppose that the woman is as thin as are nearly all women who have had rickets.

131. The compasses whose legs extend inside of the pelvis have not given anything except an inexact result; and more than once were found errors amounting to several twelfths of an inch more or less than the product that they had given, both because it is hard to keep one of the legs upon the centre of the projection of the base of the sacrum while one replaces or places the other branch behind the pubis, and because the soft parts which line the pelvis resist their insertion. Moreover, their use is always accompanied by pains, which excite the action of these same parts. One may not make use of them in the case of young girls regarding whose condition doubting relatives ask for information before marrying them; nor may one use them even in the case of married women except at the time of delivery.

132. When the index finger is inserted in the vagina and moved in the correct way, it too may disclose the length of the lesser diameter of the superior strait, and the narrower the pelvis the easier it is to ascertain it. The tip of this finger is advanced over the middle of the part where the base of the sacrum projects most, near where it meets the body of the last lumbar vertebra, and as one raises the wrist one places the radial edge of this same finger upon the lower edge of the symphysis of the pubis. One uses the nail of the index finger of the other hand to mark on this finger the point at which

the symphysis in question falls; and after one has withdrawn it from the vagina one measures the length from this point to the tip [of the finger]. This measure, which represents a line descending obliquely from the middle of the prominence of the sacrum to the lower edge of the symphysis of the pubis, is usually half an inch greater than the diameter of the superior strait considered from the same point of the os sacrum to the top of the symphysis mentioned. An obstetrician who is highly skilled at such investigations as these will, by following this process, not be able to be mistaken by more than one twelfth of an inch or at most one sixth, whatever be the form and the degree of opening of the pelvis; that fact could hardly lead him to commit fatal blunders in the practice of delivery.

133. One cannot approximate the same precision in estimating the other diameters, save the diameter of the inferior strait, which runs from the pubis to the coccyx; but yet they are evaluated well enough for one to avoid making a serious mistake as to the choice of means to use in performing the delivery. If the external dimensions of the pelvis fail to tell us the transverse diameter of the superior strait, and if the finger inserted into the vagina cannot measure this diameter, one judges of its length as regards delivery by the length of the former. When the diameter which runs from the pubis to the sacrum is small enough to cause serious obstacles, it is excessively rare for the other to be so at the same time, and still rarer for the latter to be deficient while the former has the required length. If one measures the transverse diameter from one iliac notch to the other, that is, between the two points which are farthest away from the superior strait, one will never find that it is less than four inches, whatever be the length of the diameter from front to back; but this transverse line, the longest that can be found in the superior strait, cannot be regarded as the diameter of this strait. We observe that, far from passing through the centre of this opening, it touches the sacrum after a fashion in most deformed pelvises and that in several it passes below the projection of the base of this bone. If the transverse diameter is to be measured from

one side of the strait to the other, at an equal distance from the projection of the sacrum and of the symphysis of the pubis, it will always be shorter than I have just stated, but nevertheless always longer than the anteroposterior diameter.

★ ★ ★ ★ ★

Gustav Adolph N. Michaelis • 1798-1848

THE PIONEER in our modern knowledge concerning pelvic contractions was Gustav Michaelis, the son of a physician, who was born in Harburg, July 9, 1798. He received his medical education in Kiel under Wiedemann, in Göttingen, and in Paris. He returned to Kiel in 1823 as assistant to his former teacher and, after the latter's death in 1841, succeeded him as director of the clinic. He continued in this position for seven years and in 1848 took his own life in a period of depression brought on by his melancholy over an epidemic of puerperal fever. Michaelis was not only an excellent teacher but was famous as an obstetrical operator. His great work "*Ueber das enge Becken*" Leipsic, 1851, was brought out by his successor Litzmann. Michaelis carefully measured the pelvis in 1000 consecutive cases of labor, designating as contracted pelvis all in which the true conjugate measured 8.75 cm.—or less. In this series he found an incidence of 7.2 per cent. His successor, Litzmann, felt obliged to correct somewhat this criterion and it is the latter's definition and criteria which form the basis of our present day classification.

THE DIAGNOSIS OF PELVIC CONTRACTIONS*

iv. *The diagnosis of pelvic contractions intra vitam:* #121. Pelvimetry is the only reliable guide for the diagnosis of pelvic contraction. It is true that a narrow pelvis can probably be accurately diagnosed on the basis of certain extreme physical deformities. Yet these cases are very rare. Even they rely on pelvimetry when the degree of pelvic contraction must be determined which justifies the most serious expedients, particularly cesarean section.

* Michaelis, G. A. *Das enge Becken: nach eigenen Beobachtungen und Untersuchungen.* Leipzig, Georg Wigand, 1851.

Pelvimetry is the most reliable diagnostic measure in most cases of pelvic contraction, irrespective whether pelvic deformity was due to disease, constitution, or parturition. The latter furnishes reliable information in some cases. Yet in the case of primiparae and often in that of multiparae knowledge is frequently obtained too late to save both mother and child by timely and rational treatment. How many children and mothers are the victims of premature interference because the obstetrician fails to realize the pelvic contraction?

Nevertheless the secondary symptoms of pelvic contraction merit consideration. In some cases they at least suggest the latter condition, whose true evaluation must be clearly stated by scientists in order to counteract its serious overestimation. Consequently I shall fully discuss the symptoms indicated by anamnesis, constitution, and parturition.

(a) *Anamnesis.* #122: Among the diseases positively causing pelvic deformity we are at present familiar with osteomalacia and rickets, unless we include the rarer cases where osteostomatata, exostoses, or fractures of the bones involve the pelvis. Personally I am familiar only with rickets, to which I confine my notes.

#123. Only one third of all cases of pelvic contraction are caused by rickets. Only 20 out of 72 women reported previous rickets or still presented positive symptoms of it. 4 women reported previous scrofula. Therefore in 24 women the etiology of this deformity was fairly well established, while in 48 women it could not be traced, and even seemed improbable considering the physique of some of these women.

15 of the 24 cases of rachitic pelvis presented a diagonal conjugate diameter of 3" 9" or less, while only 3 out of the other 48 cases showed such pronounced pelvic contraction. I must state, however, that the above statistics are proportionally unfavorable to rachitic pelvic contraction, for many of the nonrachitic cases exhibited general pelvic contraction whose proportions were not correctly indicated by the conjugate diameter alone. Yet for our locality rickets constitutes the most important etiologic factor of marked deformity.

Its diagnostic value is somewhat restricted, however, for even when very marked and chiefly involving the lower body it does not invariably affect the pelvis adversely. This special type and higher degree of rickets is most easily diagnosed from the fact that it retards early walking. Among the 24 cases presenting rachitic pelvic contraction only 10 pregnant women reported that they learned to walk between the ages of 3 to 7 years. On the other hand, among 1000 pregnant women there were 5, 4 of whom made the same statement as above without any evidence of pelvic contraction; while the 5th woman's case was doubtful because of a diagonal conjugal diameter of 4" 1''' to 4" 2'''.

#124: Concerning the cause of contraction in the majority of nonrachitic pelvic cases, my inquiries yielded, on the whole, mostly negative results. In one case it was attributed to atrophy due to very poor nursing care during the first years of infancy which prevented walking before the age of 3. In two other cases it was presumably due to heavy labor during early adolescence. Yet the causes named are diagnostically of no account. In very many cases we must, therefore, assume an individual and partly congenital constitutional factor as a cause. This indicates the heredity of pelvic contraction.

#125: *Heredity:* Heredity is not only an etiologic factor in rachitic contraction, but also in women who positively never have had rickets. 4 of my private patients presented nonrachitic pelvic contraction, but even this small number proves much since the doctor sometimes overlooks informing himself on this point, or the patient lacks the necessary knowledge for a correct reply. Consequently often only the more strikingly abnormal cases are observed. In the above 4 cases difficult labor had been reported for either the mother or the sisters respectively, some of whom died after difficult delivery. My 4 women patients therefore regarded difficult labor as a hereditary calamity. I believe that in non-rachitic pelvic contraction heredity as a diagnostic symptom deserves the obstetrician's attention although, like all such symptoms, it does not justify jumping at conclusions (*cf* cases 11, 25, 70, 76).

(b) *Physique*: #126: I quote statistics on a few general factors only. Later I shall discuss special physical changes concerning definite pelvic types.

#127: *Stature*: Among 72 women with pelvic contraction 29 were small, 37 were medium large, and 6 were very tall. This confirms the generally accepted theory that stature alone is no indicator of pelvic width. Only an extremely small stature caused by rickets, or a real symmetric dwarf, indicate pelvic contraction. But an unusually tall stature, even when associated with large bones, does not invariably present pelvic width.

#128: *Width of the hip region*: The median distance between the trochanters is from 11-12 inches. Among 72 women with pelvic contraction 27 showed a distance of 12" or more, 32 a median distance, and 13 a distance of 11" or less. Among the latter delivery was terminated by operation in only 1 woman. Among 15 women with the highest degree of pelvic contraction 2 showed lesser, 11 showed median, and 2 showed greater distance respectively. Consequently this symptom is on the whole of no value.

No importance must be attached to the distance between the crests of the ilium, and less still to that between the superior anterior spines. The latter is often very pronounced in pelvic contraction as stated in the following paragraph.

#129: *Scoliosis*: In my opinion scoliosis is not infrequently associated with pelvic contraction even where all evidence of rickets is lacking. Among the above 72 women 7 presented a scoliotic pelvis. However, I have also observed it very often without any pelvic contraction (*cf* description of rachitic pelvis).

#130: *Structure of lower extremities*: Wigand stresses weak lower extremities as a poor prognostic symptom frequently observed in general pelvic contraction. I do not wish to contradict him in this special case. Yet I must state that even cases of strong lower extremities can be associated with pelvic contraction. Among 72 women 8 presented weak and partially bent legs, but in 9 others the legs were particularly strong

and well shaped. The majority of the women showed typical lower extremities.



Carl Conrad Theodor Litzmann . 1832-1890

AFTER THE death of Michaelis, whose pioneer work in the classification and recognition of abnormal pelvises has been referred to, his work was carried on by his successor Litzmann, who is no less famous than his noted predecessor. It is Litzmann's definitions and criteria that have been largely adopted throughout the world.

Litzmann was born in Mecklenburg, October 7, 1832. His father was a successful practising physician, who was determined that his son should study medicine in spite of the latter's preference for literature and historical studies. Litzmann entered the University of Berlin where he came under the influence of Johann Müller, who aroused in him a love for the natural sciences. Litzmann continued his study of clinical subjects at Halle, where his contact with Krukenberg reconciled him to the profession which had been forced upon him. His first position was that of assistant in the obstetrical clinic under Niemeyer, where he continued after the latter's death for three years under Hohl. In spite of the fact that Litzmann was active in all branches of medical science, including forensic medicine and medical anthropology, he devoted himself mainly to obstetrics. His first call came in 1845 as Extraordinary Professor of Theoretical Medicine at Greifswald. In 1848 he was called to Kiel as Director of the obstetrical clinic. Litzmann remained here until his seventieth year when he removed to Berlin. Litzmann was not only a master in obstetrics but with the beginning of Listerism he began to practise intraabdominal procedures for gynecological disorders. Litzmann always maintained an active interest in literature and wrote a life of the poet Geibel and a life of Hölderlin,

THE COMPREHENSION OF THE CONTRACTED PELVIS*

The pelvis fulfills wider functions in the female body than it does in the male. In woman it constitutes the bony substratum of the trunk supported by the limbs, to which strong and numerous muscles are attached. Besides the lower portion of the intestinal canal and the urinary passage, it also lodges the largest part of the sexual apparatus, and thereby becomes of fundamental importance in the act of propagation. Apart from the admittance of the male organ in the act of copulation, it has to give space during pregnancy for the entire uterus at the beginning, and later on, at least for the lower segment of the uterus, space for enlargement; and with the birth of the mature fetus it must give the latter, together with its membranes a passage to the outer world. Nature has been able in a marvelous way to satisfy these various and somewhat contradictory claims which are thus placed upon it. She has imparted to the pelvis the necessary firmness with the greatest economy possible in osseous substance, while she gave it an annular shape, and supported the connection of its parts with powerful ligaments; but she accumulated the larger osseous substances only on those places which are immediately exposed to pressure. She placed the canal which opens up at the most dependent portion of the trunk in such a position that it can bear the burden of the viscera, and give support and firmness to the inclosed organs; while she caused it to incline at a sharp angle forward against the horizon, bent its course in a convex curve toward the posterior, and covered and completed its walls with contractile and elastic soft parts. And in this way it attained also for the act of birth a sufficient spaciousness and dilatability. Moreover the space is so dimensioned that even a relatively slight departure from the normal breadth can disturb the act of birth especially if the difficulties are not compensated by correspondingly more favorable circumstances in the rest of the factors of child-birth.

* Litzmann, C. C. T. *Die Formen des Beckens, etc.* Berlin, 1861, p. 1.

If we are discussing contraction of the pelvis, we have in view only its relationship to the act of birth. Nevertheless the disadvantageous influence of pelvic contraction is not limited to this process. Both during pregnancy as well as in the puerperium it can either occasion an abnormal position of the uterus, or else induce it to remain in a faulty position which has been brought about by other transitory causes. A direct encroachment upon other functions: for example, urinary excretion, is observed only by way of exception in the severest stages of osteomalacic pelvic contraction.

Concerning the average of normally constructed female pelvis, there is quite a unanimity of opinion among the newer writers, at least concerning that diameter whose end-point can be exactly determined. The question of how much shortening of one or several diameters must occur in order to be able to describe the pelvis as contracted, can only be decided from a practical standpoint, after the actual influence upon the process of labor. Stein, d. Ae., first attempted to determine the prognosis of birth in a narrow pelvis according to the degree of the contraction, or rather according to the length of the conjugata vera. Even the opinions of later authors are concerned in a more or less outspoken way—chiefly with this dimension only, and hence can claim recognition only for the simple-flat pelvis. A closer consideration of this view and the reasons for it, yields a two-fold source of error. First, the uncertain and unreliable valuation of the conjugata vera, which was determined by an arbitrarily established deduction from the conjugata diagonalis, which in the majority of cases does not occur—or even from the external conjugate. Then also the incomplete knowledge of the effects of the contracted pelvis, since up to the time of Michaelis only the direct mechanical difficulty of birth was kept in mind, and in this alone was determined the practical characteristics of pelvic contraction. From this partly ambiguous and partly erroneous standpoint we see the limits of the contracted pelvis drawn now too broad, now too narrow; too broad for those limits which already with a shortening of the conjugata vera of $\frac{1}{4}$ to $\frac{1}{2}$ "

gave rise to a direct mechanical difficulty at birth; too narrow for those which limit the idea of the contracted pelvis to those cases in which the contraction presents in reality an immediate mechanical hindrance to birth. According to my experience, which agrees fundamentally with that of Michaelis, and a more detailed discussion of which I reserve for later treatment, in the simple-flat pelvis the limit shows on an average a shortening of the conjugata vera of $3\frac{1}{2}$ ", from which we may assume a pelvic contraction in the obstetric sense. Yet it is to be noted that in this least degree of contraction, under favorable circumstances, with normal labor pains, normal size and favorable position of the head of the fetus, there can hardly be noticed any mechanical difficulty of birth; however a definite influence upon the mechanism of labor becomes apparent, under the influence of unfavorable complications—feebleness of labor pains, pendulous belly, unusual size or hardness, or unfavorable position of the fetal head,—already very considerable disturbances of the act of delivery can appear; and that in the proportion in which the conjugata vera is less than $3\frac{1}{2}$ ", the danger of a direct mechanical difficulty grows, especially in combination with other unfavorable circumstances. If the flat pelvis is contracted in other directions as well, or if the pelvis is a generally and regularly contracted one, naturally even with a slight shortening of the conjugata vera serious difficulties at delivery can result. But here it is disproportionately harder to determine the limits, since the degree of contraction in the other directions cannot be determined in the living person, at least not with satisfactory exactness. According to my experience up to now, I should like to believe that shortening of all the pelvic diameters of $\frac{1}{4}$ " is by itself scarcely able to make delivery noticeably difficult. My experience has not been extensive enough to allow me to make more certain estimates for the prognosis of pelvises that are diagonally contracted or obliquely distorted.

CHAPTER SEVEN

GYNECOLOGY

FOREWORD

GYNECOLOGY is in no sense a new Science and the vaginal speculum, cervical dilator and other appliances were known to the ancients. However, until more or less recent times it is probable that little exact knowledge existed concerning the diseases of the female generative organs. Modern Gynecology may be said to have received its impetus from the pioneer work of Ephraim McDowell in the development of a successful surgical treatment of ovarian tumors. His work was carried on by Nathan Smith and W. L. Atlee in America, while Spencer Wells in England stands out as foremost in the development of the field abroad.

The further development of Gynecology also had its beginnings in America and was due in great part to the brilliant achievements of Marion Sims in the plastic surgery of the female genitalia. Sims was followed by Emmet, Tait, Thomas and many others both in this country and abroad, so that from these beginnings a practically new field of surgical endeavor was developed. In presenting the following selections because of a necessary limitation of space only those have been chosen which deal with the beginnings of Modern Gynecology as defined above.

Ephraim McDowell · 1771-1830

THE CONTRIBUTIONS of McDowell form the fundamental knowledge upon which modern abdominal surgery rests. McDowell was born in Rockbridge County, Virginia, in 1771. At an early age his family removed to Danville, Kentucky, and this became his permanent abode. After an apprenticeship to a Doctor Humphreys of Staunton, Virginia, in 1793, McDowell went to the University of Edinburgh.

Here under the influence of John Bell he received inspiration which influenced his whole career. After two years he returned to America and began to practice in Danville. Within a short time he assumed the medical leadership of the community and in a few years he was the most eminent surgeon west of the Alleghenies. McDowell performed all the surgical operations then practised and was especially successful in lithotomy.

EPHRAIM McDOWELL (1771-1830)

In 1809 he performed his celebrated operation for ovarian tumor, fully realizing that the procedure was an experimental one. Some years elapsed before he published his procedure, during which time he performed two additional ovariectomies, both successful. McDowell's first report appeared in the *Eclectic Repertory and Analytical Review* in October, 1816.* Three years later he reported in the same journal two additional cases at which time he stated, "I think my description of the mode of operating, and of the anatomy of the parts concerned, clear enough to enable any

* *The Eclectic Repertory and Analytical Review, Medical and Philosophical*. Edited by a Society of Physicians, vol. VII, p. 242, 1817.



good anatomist, possessing the judgment requisite for a surgeon, to operate with safety. I hope no operator of any other description may ever attempt it. It is my ardent wish that this operation may remain to the mechanical surgeon forever incomprehensible." Following McDowell's pioneer work for many years the profession in general failed to give approval. However with the introduction of anesthesia and especially Listerism the abdominal procedure inaugurated by McDowell became recognized.

THE OPERATION OF OVARIOTOMY*

In December 1809, I was called to see a Mrs. Crawford, who had for several months thought herself pregnant. She was affected with pains similar to labour pains, from which she could find no relief. So strong was the presumption of her being in the last stage of pregnancy, that two physicians, who were consulted on her case, requested my aid in delivering her. The abdomen was considerably enlarged, and had the appearance of pregnancy, though the inclination of the tumor was to one side, admitting of an easy removal to the other. Upon examination, per vaginam, I found nothing in the uterus; which induced the conclusion that it must be an enlarged ovary. Having never seen so large a substance extracted, nor heard of an attempt, or success attending any operation, such as this required, I gave to the unhappy woman information of her dangerous situation. She appeared willing to undergo an experiment, which I promised to perform if she would come to Danville (the town where I live), a distance of sixty miles from her place of residence. This appeared almost impracticable by any, even the most favourable conveyance, though she performed the journey in a few days on horseback. With the assistance of my nephew and colleague, James M'Dowell, M.D., I commenced the operation, which was concluded as follows: Having placed her on a table of the ordinary height, on her back, and removed all her dressing which might in any way impede the operation, I made an incision about three inches from the musculus

* Three Cases of Extirpation of Diseased Ovaria. By Ephraim M'Dowell, M.D., of Danville, Kentucky.

rectus abdominis, on the left side, continuing the same nine inches in length, parallel with the fibres of the above named muscle, extending into the cavity of the abdomen, the parieties of which were a good deal contused, which we ascribed to the resting of the tumor on the horn of the saddle during her journey. The tumor then appeared full in view, but was so large that we could not take it away entire. We put a strong ligature around the fallopian tube near to the uterus; we then cut open the tumor, which was the ovary and fimbrious part of the fallopian tube very much enlarged. We took out fifteen pounds of a dirty, gelatinous looking substance. After which we cut through the fallopian tube, and extracted the sack, which weighed seven pounds and one half. As soon as the external opening was made, the intestines rushed out upon the table; and so completely was the abdomen filled by the tumor, that they could not be replaced during the operation, which was terminated in about twenty-five minutes. We then turned her upon her left side, so as to permit the blood to escape; after which, we closed the external opening with the interrupted suture, leaving out, at the lower end of the incision, the ligature which surrounded the fallopian tube. Between every two stitches we put a strip of adhesive plaster, which, by keeping the parts in contact, hastened the healing of the incision. We then applied the usual dressings, put her to bed, and prescribed a strict observance of the antiphlogistic regimen. In five days I visited her, and much to my astonishment found her engaged in making up her bed. I gave her particular caution for the future; and in twenty-five days, she returned home as she came, in good health, which she continues to enjoy.

Since the above case, I was called to a negro woman, who had a hard and very painful tumor in the abdomen. I gave her mercury for three or four months with some abatement of pain; but she was still unable to perform her usual duties. As the tumor was fixed and immovable, I did not advise an operation; though from the earnest solicitation of her master, and

her own distressful condition, I agreed to the experiment. I had her placed upon a table, laid her side open as in the above case; put my hand in, found the ovarium very much enlarged, painful to the touch, and firmly adhering to the vesica urinaria and fundus uteri. To extract I thought, would be instantly fatal; but by way of experiment I plunged the scalpel into the diseased part. Such gelatinous substance as in the



THE FIRST OVARIOTOMY
From a painting by G. K. Knapp.

above case, with a profusion of blood, rushed to the external opening, and I conveyed it off by placing my hand under the tumor, and suffering the discharge to take place over it. Notwithstanding my great care, a quart or more of blood escaped into the abdomen. After the hemorrhage ceased, I took out as clearly as possible the blood, in which the bowels were completely enveloped. Though I considered the case as nearly hopeless, I advised the same dressings, and the same regimen

as in the above case. She has entirely recovered from all pain, and pursues her ordinary occupations.

In May 1816, a negro woman was brought to me from a distance. I found the ovary much enlarged, and as it could be easily moved from side to side, I advised the extraction of it. As it adhered to the left side, I changed my place of opening to the linea alba. I began the incision, in company with my partner and colleague, Dr. William Coffer, an inch below the umbilicus, and extended it to within an inch of the os pubis. I then put a ligature around the fallopian tube and endeavored to turn out the tumor, but could not. I then cut to the right of the umbilicus, and above it two inches, turned out a scirrhous ovary (weighing six pounds), and cut it off close to the ligature, put round the fallopian tube. I then closed the external opening, as in the former cases; and she complaining of cold and chilliness, I put her to bed prior to dressing her—then gave her a wine glass full of cherry bounce, and thirty drops of laudanum, which soon restoring her warmth, she was dressed as usual. She was well in two weeks, though the ligature could not be released for five weeks; at the end of which time the cord was taken away; and she now, without complaint, officiates in the laborious occupation of cook to a large family.



Nathan Smith . 1762-1829

NATHAN SMITH, the "omnipresent genius in New England medicine," performed ovariotomy in 1821, with no knowledge that McDowell had preceded him. So slow was medical news in that day that ten years later his son wrote, "I am not confident that the first operation by Doctor McDowell was subsequent to that of my father." The Smith operation becomes the more remarkable when we realize that he anticipated modern surgical technique by dropping the tumor pedicle into the abdominal cavity instead of suturing it to the abdominal wall. Like McDowell, Nathan Smith had



Courtesy of Yale University School of Medicine

NATHAN SMITH (1762-1829)
From a painting by S. F. B. Morse.

received unusual training both here and abroad. He performed many times all the acknowledged surgical procedures of his day. The operation for the removal of an ovarian cyst in 1821 was performed when Nathan Smith was 59 years of age, while he was Professor of Physic and Surgery at Yale College. Besides many important contributions to both medicine and surgery, his fame

also rests as a great pioneer in medical education. William H. Welch says of him, "We now see that he did more for the general advancement of medical and surgical practice than any of his predecessors or contemporaries in this country."

A CASE OF OVARIOTOMY*

ART. XIV. *Case of Ovarian Dropsy, successfully removed by a Surgical Operation.* Communicated by DR. NATHAN SMITH, Professor of Physic and Surgery at Yale College.

The subject of this operation was a Mrs. Strobridge, of Norwich, Vermont, aged 33 years.

The following account of the case, previous to the operation, was taken from the patient:—Seven years before, she perceived a small tumour in her right side, situated in the right iliac region; when about the size of a goose egg, she could move it with her hand to the opposite side of the linea alba, and to some distance above the umbilicus. The patient had borne five children, two previous and three subsequent to her discovering the tumour. The youngest child was 10 months old, and was nursed at the breast when she submitted to the operation. Soon after her first pregnancy, from the commencement of the tumour, and then, as she thinks, it was about 4 or 5 inches in diameter, it suddenly disappeared, probably burst into the abdomen. In 4 or 5 weeks it was as large as before. Before and after the bursting of the tumour she had turns of faintness, which lasted from two hours to half a day. During parturition of her second child, after the commencement of the tumour, it having acquired a considerable size, it burst again, and nothing was perceived of it till eight months had elapsed. In four days from its reappearance it was as large as it had ever been. It was again burst by a fall; great soreness of the abdomen, and confinement of the patient for several weeks was the consequence. The tumour filled again in a fortnight, and from this time continued to increase; it did not burst in the delivery of her last child, which was ten months previous to the

* *The American Medical Recorder.* Vol. V, 1822

operation. The patient's health was not much affected by the tumour. She was costive; and the size of the tumour incommoded her in the ordinary duties of her family, especially in stooping. On examination I found a large tumour in the right side of the abdomen; it was considerably moveable, and I could produce a distinct fluctuation through it.

★

Having decided on the operation, and determined the mode of operating, on the 5th of July, in the presence, and with the assistance of Doctors Lewis, Mussey, Dana, and Hatch, I commenced the operation as follows:

The patient being placed on a bed, with her head and shoulders somewhat raised, an assistant rolled up the tumour to the middle of the abdomen, and held it there. I commenced an incision about an inch below the umbilicus, directly in the linea alba, and extended it downwards three inches. I carried it down to the peritoneum, and then stopped till the blood ceased to flow, which it soon did. I then divided the peritoneum the whole extent of the external incision. The tumour, now exposed to view, was punctured; a canula introduced, and seven pints of a dark coloured ropy fluid was discharged into a vessel. About one pint was spilt, so that the whole fluid was about eight pounds. Previous to tapping the tumour, by inserting my finger by the side of it, I ascertained that it adhered to some extent to the parietes of the abdomen, on the right side, between the spine of the ileum and false ribs. After evacuating the fluid I drew out the sack, which brought out with it, and adhering to it, a considerable portion of the omentum. This was separated from the sack with the knife; and two arteries which we feared might bleed, were tied with leather ligatures, and the omentum was returned. By continuing to pull out the sack, the ovarian ligament was brought out, this was cut off, two small arteries secured with leather ligatures, and the ligament was then returned. I then endeavoured to separate the sack from its adhesions to the parietes

of the abdomen, which occupied a space about two inches square; this was effected by a slight stroke of the knife at the anterior part of the adhesion, and by use of the fingers. The sack then came out whole, excepting where the puncture was made, and I should think it might weigh between 2 and 4 ounces. The incision was then closed with adhesive plaster, and a bandage was applied over the abdomen. No unfavourable symptoms occurred after the operation; in three weeks the patient was able to sit up and walk, and has since perfectly recovered.

I was induced to undertake this operation from the following considerations: The patient, though her health was not greatly impaired, was sensibly affected by the disease. She was quite certain that the increase of the tumour, in a given time, was augmented; probably, at no very distant period, it would have destroyed her. I had also had an opportunity to dissect the body of a patient, who had died of ovarian dropsy, who had been tapped seven times. In this case the sack was found to be in the right ovary, which filled the whole abdomen; but it adhered to no part except the proper ligament, which was not larger than the finger of a man. I have seen two other ovarian sacks which were taken from patients after death. They had been tapped several times; the sacks were equally unattached, except to their proper ligaments. Hence, I inferred, that in a case of ovarian dropsy, while the tumour remained moveable, it might be removed with a prospect of success. The mode of operating, practised in the above case, is the same that I have described to my pupils in several of my last courses on surgery. The event has justified my previous opinions.



Sir Thomas Spencer Wells · 1818-1897

HISTORIANS are agreed that the history of the established and successful practice of ovariectomy dates from the publication of Spencer Wells' first book in 1864. "To Mr. Spencer Wells" says Lawson Tait, a noted contemporary, "must be accorded the credit of having placed ovariectomy in the position, not only of an acknowledged operation, but of one of the most successful of one of the great operations of surgery." Spencer Wells was born at St. Albans, Hertfordshire, February 3, 1818. His medical education began as an apprentice to Michael Sadler, a general practitioner at Barnsley, Yorkshire. At this time Wells also saw some practice at Leeds Infirmary. In 1836 he entered Trinity College, Dublin, and in 1839 he became a student in St. Thomas' Hospital, London. Two years later he was admitted as a member of the Royal College of Surgeons and at this time also he joined the Royal Navy, where he served for six years in the Naval Hospital at Malta. In 1848 he left the Navy and went to Paris, where he studied pathology under Magendie. He began practice in London in 1853, devoting his attention at first to Ophthalmic surgery. In April, 1854, Wells became first acquainted with the operation of ovariectomy when he assisted Baker Brown at his eighth ovariectomy which ended fatally. Wells' first operation, four years later,



T. Spencer Wells

SIR THOMAS SPENCER WELLS (1818-1897)

also ended fatally but it served to stimulate him to devote himself assiduously to the perfection of the operation as a recognized procedure. It was not until 1864 that the operation was generally accepted by the profession. In 1880 Wells had performed his thousandth operation. His biographer, D'Arcy Power, calls him the "originator of modern abdominal surgery." It is quite true that the technique governing the operation of ovariotomy, combined with the methods introduced by Lister, has been applied to operative procedures on all the other abdominal viscera. Many honors came to Wells during his lifetime, including recognition from many foreign universities and governments.

OVARIOTOMY*

The intra-peritoneal method was originated, in 1821, by Dr. Nathan Smith, of Baltimore, who secured the pedicle by leather ligatures, and, after removal of the tumour, cut off the ends of the ligatures short, and left them within the peritoneal cavity, closing up the wound completely. He was followed by Dr. Rogers, of New York, who, in 1930, also cut off the ligatures "close to the knot, and left them to absorption." In England this method was revived by Dr. Tyler Smith, and has been followed by many operators.

The other intra-peritoneal methods include the use of the cautery, the écraseur, the twisting off of the tumour, torsion of its vessels, or the separate ligature of the vessels of the pedicle, rather than of the pedicle itself.

In adopting the extra-peritoneal method, instead of shutting up the pedicle with the ligature, or the eschar made by the cautery, within the peritoneal cavity, the pedicle and the clamp or ligature securing it are carefully fixed outside the closed wound.

The following extract from clinical remarks which I made at the 'Samaritan Hospital' in October, 1868, and which were published soon after in the *Medical Times and Gazette*, may be taken as the expression of an opinion which subsequent

* Wells, T. Spencer. *Diseases of the Ovaries*. New York, 1873, p. 360.

experience has confirmed, as to the relative value of the extra- and intra-peritoneal methods of dealing with the pedicle.

'Since last October I have completed the operation of ovariotomy in this Hospital in thirty-six cases, besides one case in which I performed the operation successfully for the second time on the same patient. Of the thirty-six women, thirty-one recovered and five died. And it is a remarkable fact that in every case in which the pedicle was long enough to enable me to use the clamp the patient recovered. There were thirty of these cases—thirty clamp cases in one year without a single death. In two cases I used the cautery. One of the patients recovered, and one died. In four cases I tied the pedicle, and returned it into the cavity of the abdomen after cutting off the ends of the ligature. All these four patients died. Two of them must have died, I think, in whatever manner the pedicle had been treated. They were almost hopeless cases, and the operation was done as a forlorn hope. In one case the patient was sinking fast from septicaemia, a cyst filled with foetid fluid and poisonous gas having been washed out repeatedly, but ineffectually, with carbolic acid, and it was at last removed with only the very faintest hope of saving life. In the other case, extensive pelvic adhesions and disease of both ovaries had been pretty accurately made out, and had led to repeated tappings rather than ovariotomy. But at length, when tappings became of no avail, the cysts were removed, with some slight hope but with far greater apprehension. A clamp could not be used in either case. The pedicles were too short. The cautery might have been used; but the pedicles were of the kind where the cautery is often ineffectual in stopping bleeding—broad, thin, membranous attachments, with large vessels. In such cases the ligature succeeds well in stopping bleeding; but whether the ends are left hanging out through the opening in the abdominal wall, or are cut off short and returned with the pedicle, the results in my hands have been almost equally unsatisfactory. Other operators have been much more satisfied with the ligature than I have been.

and everyone must be guided very much by his own experience. But when I look back over the work of the past year in this Hospital, where all the patients have been treated in all other circumstances under similar conditions, and find no single death in thirty clamp cases, but every one a recovery, while of six cases treated otherwise five died, you will hardly wonder that I use the clamp whenever I can, especially as very similar results have been obtained in private practice. It is true, as I have just said, that two of these five deaths would probably have happened even if I had been able to use a clamp. But three of the deaths I attribute principally, or entirely to the fact that, as I was unable to secure the pedicle outside the peritoneal cavity, I was driven against my will to the cautery or the ligature. Twice I used the cautery. In one case it stopped all bleeding, and the patient recovered. In another it only stopped the smaller vessels, the larger having to be tied, and this patient died; so that her death might be added to that of the four who died after the return of the tied pedicle. Or if, as I think it is fair to do, we put aside (so far as the treatment of the pedicle is concerned) the two cases which probably must have died however the pedicle had been treated, we have three cases where death followed the use of the ligature; and, so far as I can judge from observation of similar cases, these three patients would probably have recovered if the pedicles had been long enough for a clamp to have been applied and fixed outside the peritoneal cavity.'



Robert Battey · 1828-1895

ROBERT BATTEY of Augusta, Georgia, was the first to suggest the operation of oophorectomy for such conditions as dysmenorrhea and neuroses. Battey was born November 26, 1828 in Augusta, Georgia, and began to study medicine in 1849 under Dr. George M. Battey, his brother. Later he graduated from Jefferson Medical College. After post-graduate studies in various hospitals in Paris, he settled in Rome, Georgia, where he spent most of his life. At one time he held the chair of obstetrics in Atlanta Medical College. What has been called Battey's operation (oophorectomy) was first done by him on August 27, 1872. The principles of this operation laid the foundation for the surgical treatment of many other pelvic conditions which was later to be developed by such men as Hegar in Germany and Tait in England.



Robert Battey

ROBERT BATTEY (1828-1895)

EXTIRPATION OF THE FUNCTIONALLY ACTIVE OVARIES FOR THE REMEDY OF OTHERWISE INCURABLE DISEASES*

Some four years ago I brought to the notice of the Medical profession, through the columns of the *Atlanta Medical and Surgical Journal*, a new surgical operation, and related a

* *Transactions of American Gynecological Society*. 1876, v. 1, p. 101.

case in which I had removed the ovaries, still in a state of functional activity, from a young lady who was suffering serious detriment to her health and peril to her life by reason of an excessive menstrual molimen which was wholly unrelieved by the usual menstrual flux. In the intervening time other similar operations have been performed. In scarce any two cases of the short series have the urgent symptoms complained of been the same or strikingly analogous, and yet all have had certain features in common, which may very properly group them into a single class, inasmuch as they have all been characterized by a vicious or abnormal ovulation upon the one hand, and have all obstinately resisted the more usual and well accepted methods of treatment upon the other hand.

I am very sensible of the fact that the number of these operations is as yet entirely too small to establish any new principle, or warrant the drawing of any definite conclusions from the facts thus far ascertained. My own inclination would be not to intrude either my work or myself upon the notice of my brethren until I might be able, at a future time, to offer more enlarged and more mature results. Two considerations, however, have prevailed with me to make to the Society this meagre report, namely: an expressed desire of certain members of the Society to have early possession of the facts thus far ascertained, and the consciousness that my obscure and circumscribed field of labor must necessarily render the accumulation of additional facts very slow and difficult in the future, as it has been in the past.

In doing these operations I have sought to effect a cure of the varied maladies complained of, by the removal, in certain instances, of an ovary viciously or abnormally performing its functions, and more frequently by the removal of both ovaries, to put an end to ovulation entirely, and thus to determine the menopause or change of life; whereby I have hoped, through the intervention of the great nervous revolution which ordinarily accompanies the climacteric, to uproot and remove serious sexual disorders and reestablish the general health. I have done ten operations in all; of which three fall under the former and seven under the latter head.

What are the indications for this operation? I have endeavored to make myself understood in answer to this question in my published communications and reports, but I regret to say with little success. When I report a case of amenorrhea, it is commented upon as dysmenorrhea; when I assert that I do not operate for nymphomania, and that the removal of the ovaries does not annul the aphrodisiac propensity, it is boldly stated in criticism, that I do operate for nymphomania, and that the operation is a failure!

So great is the sanctity attached to the functions of the ovary and the testicle, in the professional as well as the popular mind, I hold that neither of these organs ought to be sacrificed to the surgeon's knife excepting for just cause and provocation, and after mature deliberation. I go further than this, I believe that these organs should alone be sacrificed for grave causes, and then only as a dernier resort, when the hitherto recognized resources of our art have been expended in vain. This much is due to the dignity of our calling; this much is due to humanity, to decency, and to public morality. I hold it to be the highest duty of our profession to preserve life. No physician has the moral right to say to his patient, "It is better to die than to live." No part of the human body ought be invested with such dignity and value that it may not properly be sacrificed, if need be, for the welfare of the whole. In my opinion the removal of the functionally active ovaries is indicated in the case of any grave disease which is either dangerous to life or destructive of health and happiness, which is incurable by other and less radical means, and which we may reasonably expect to remove by the arrest of ovulation or change of life. I do not propose it for any case which is curable by other means. If asked, "do I operate for dysmenorrhea, for amenorrhea, for epilepsy, for mania?" I answer both no and yes: no, if the case be susceptible of other remedy; and yes, if the case be grave and otherwise without remedy. "Do I operate for nymphomania?" No; never! There is no reason to expect its cure by the arrest of ovulation.

Washington Lemuel Atlee · 1808-1878

AMONG THE pioneers in surgery who established ovariotomy as a legitimate procedure, the name of Atlee is an important one. Not only are his contributions to ovariotomy noteworthy, but his early advocacy of treating uterine myomata by surgery represents real

pioneer work. Marion Sims says of him "The name of Atlee stands without a rival in connection with uterine fibroids . . . no man has yet dared to imitate him. A generation has passed since he gave to the world his valuable essay on the subject, but it is only within the past five or six years that the profession has come to appreciate the great truths he labored to establish." W. L. Atlee was born in Lancaster, Pennsylvania, February 22, 1808. After studying medicine with his brother, John, he entered Jefferson Med-



Washington L. Atlee

WASHINGTON LEMUEL ATLEE (1808-1878)

ical College at Philadelphia, where he graduated in 1829. He first practised in his native town, later in 1845 moving to Philadelphia when he was made Professor of Medical Chemistry at the University of Pennsylvania. When Atlee undertook to perform ovariotomy in Philadelphia he was subjected to derision and abuse to an extraordinary degree. At this time he wrote, "I found I had raised a hornet's nest. Ovariotomy was everywhere decried. It

was denounced by the general profession. . . . I was pointed at as a dangerous man, even as a murderer. . . . A celebrated professor in his published lectures invoked the law to arrest me in the performance of this operation." Atlee contributed freely to the journals of his day and wrote an octavo volume on ovarian tumors. He was a founder of the American Gynecological Society and was one time vice-president of the American Medical Association. The transcription of his celebrated essay on *Myomata Uteri* here produced in part shows in a fine way his clearness and precision of thought.

THE SURGICAL TREATMENT OF CERTAIN FIBROUS TUMOURS OF THE UTERUS, HERE- TOFORE CONSIDERED BEYOND THE RESOURCES OF ART*

In considering the surgical means for the removal of fibrous or fibro-cellular tumours of the uterus, it will be necessary to distinguish the different situations which they occupy in relation to that organ. The following classification, however, is not offered as strictly and pathologically correct, but adopted mainly to assist in illustrating the measures employed in the treatment of such tumours. I shall principally confine myself to the consideration of those tumours which have heretofore been supposed inaccessible to the knife, or not amenable to curative measures.

I ought to remark, too, that the following essay is based wholly upon my own experience; I alone am responsible for the facts therein contained, the treatment adopted, and that which will be proposed.

It will be proper, also, before entering upon the treatment in detail, to associate with the classification the symptoms and diagnosis of fibrous tumours. Here, however, I shall confine myself to the most prominent features. No symptom enables the practitioner to anticipate with certainty the existence of such tumour, and it is often ascertainable only after it has acquired considerable size. Sometimes, a digital exami-

* *Transactions of the American Medical Association*, Instituted 1847, vol. VI, p. 547.

nation will discover it at a very early period, and when of small size.

These tumours may be classified as follows:—

1. Extra-uterine, or surface tumours.
2. Intra-uterine, or cavity tumours.
3. Intra-mural tumours of the uterus.

1. EXTRA-UTERINE TUMOURS

Extra-uterine tumours originate from the peritoneal or external surface of the body and fundus of the uterus, and beneath the peritoneal coating. They are projected, as they become developed, into the cavity of the abdomen, elevating the peritoneum and retaining it as an envelop, assuming often an immense size. They may or may not be pedunculated. When attached to the uterus by a stem, the size and character of this attachment may differ in different tumours. In some, the pedicle is very slender and membranous, consisting chiefly of peritoneum with long cellular tissue, and vascular. In others, it is thicker and more resisting, constituted of both fibrous and cellular tissue, yet differing in character from the tumour itself. Again, tumours are found entirely sessile, directly attached to the external wall of the uterus, without an intervening pedicle, but narrowing at the point of junction into a distinct neck. And lastly, we notice them without a pedicle, or neck, or any narrowing, imbedded as it were in the substance of the uterus immediately beneath its peritoneal coat. The first three varieties have been removed by the operation of gastrotomy. I am not aware that any operation has been accomplished, or proposed, for the removal of the last. I apprehend that they can be extirpated, after opening the abdomen, by making an additional slit in the peritoneal coat of the tumour, and then enucleating or turning out the mass from its bed.



2. INTRA-UTERINE TUMOURS

Intra-uterine tumours arise from the internal surface of the uterus, project into its cavity, distend it, and vary, as do

extra-uterine tumours in the length, thickness, and character of their pedicles. Like the latter, they may also be sessile, having no pedicle, merely narrowing at the point of junction into a distinct neck, and they likewise may be imbedded in the substance of the uterus, immediately beneath the mucous lining, having no narrowing or neck. All these tumours receive a coat from the mucous membrane of the uterus, and the vascularity of this envelop is greatly increased beyond its natural condition. When these tumours, in this situation, are composed of a pedicle or neck and a body, they are distinguished by the name of fibrous polypi. Their tendency is to be expelled from the cavity of the uterus into the vagina, whence they have been removed by the ligature and the knife. I prefer the latter mode.

When the tumour is imbedded in the internal wall of the uterus, and merely covered by mucous membrane, or when the polypoid tumour becomes sealed to the uterine surface, as it sometimes does, in consequence of inflammation, so that it cannot be expelled by the expulsive efforts, nor the os tincae be opened by natural means, operative measures for its removal are supposed to be impossible. That this is not the case I shall endeavour to prove.



3. INTRA-MURAL TUMOURS

Intra-mural tumours originate in the very substance of the parieties of the uterus itself, within the muscular interstices. This may occur at equidistances from the external and internal surfaces of the uterus, or at any point between them. The proper tissue of the organ does not enter into their composition; it is merely pushed aside by the tumour, the muscular fibres being separated and surrounding the tumour like a cyst. This remark, however, does not apply to fibrous tumours after they have assumed a malignant character, and have become medullary, as the uterine tissue itself loses its normal character also. But when the tumour has not thus degenerated, and when there has been no inflammation during

its growth, the uterine covering can usually be peeled off from its surface as the rind from the pulp of an orange. Of course, these tumours have no pedicle. As a general rule, their growth is less rapid than extra-uterine tumours. Sometimes they develop themselves uniformly, at others unevenly, so as to assume a lobulated or nodulated form. It is supposed that these tumours admit of no remedy. I shall endeavour to prove that they are amenable to surgical treatment.

The symptoms of this class of tumours must necessarily partake of the character of those belonging to the first, and also of those incident to the early stages of the second class.

As the tumour enlarges it rises into the cavity of the abdomen, and generally assumes a more or less central position. The hand, placed above the pubis, will detect it, and if the finger at the same time be brought against the os tincae, it will be found that their impulses will reciprocally affect each other. The tumour and uterus invariably move in unison. A sound passed into the uterus, will enter generally beyond its natural distance, and partake of all the motions given to the tumour. While the sound is there we may ascertain the exact location of the tumour, as it will give a direction to the sound, and this can be felt through the unoccupied walls of the uterus. When the tumour is developed in the wall of the fundus uteri, the cervix may be uniform and in no way changed, but usually we find it deformed, and even turned upon itself, sometimes at an acute angle. When the tumour enlarges downwards so as to invade the cervix, the posterior or anterior lip may be entirely obliterated and distended into a covering for the tumour. The posterior wall of the uterus, and consequently that of the cervix most frequently are affected, and hence the os tincae is often thrown forward, under the pubis, or even raised above it, so that it is difficult, and at times impossible, to reach it with the finger.



GYNECOLOGY

James Marion Sims • 1813-1883

PRIOR TO 1852 the condition known as vesico-vaginal fistula was the stumbling block of gynecological operative procedure. Fatio (1752) and Roonhuyze (1672) had given good accounts of their methods but no account of successful cases. Kelly says that the whole matter was changed by the "magic wand" of James Marion Sims, a South Carolinian, born in 1813.

After graduating from Jefferson Medical College, Philadelphia, in 1835, Sims settled in Alabama, where he established himself as a capable surgeon. In 1835 he operated successfully for abscess of the liver and in 1837 removed both upper and lower jaws. In 1845, while attempting to correct by digital examination, a uterine displacement, he discovered the great usefulness of the lateral posture (Sims' position). By means of a special curved speculum which he invented, he was able to expose the vaginal field so

that operative procedure became practical. To the Sims' position and the Sims' speculum, he added the silver wire suture and the retention catheter. With these devices, he perfected his operation and published his first report in 1852. In 1853 Sims removed to New York and in 1855 established the Woman's Hospital. In 1861 he visited Europe, demonstrating his procedures before the leaders in surgery. His *Clinical Notes on Uterine Surgery*, published in 1866, was translated into German. Among other contributions



J. Marion Sims

JAMES MARION SIMS (1813-1883)

is his method for amputating the cervix and his description of Vaginismus. In 1894, on land adjoining the New York Public Library, admiring European and American friends erected a statute in memory of J. Marion Sims.

THE TREATMENT OF VESICO-VAGINAL FISTULA*

Having thus briefly alluded to what has been done, up to the present time, for the treatment of this affection, I shall now proceed to detail my own operation.

I conceive that I may claim originality: 1st. For the discovery of a method by which the vagina can be thoroughly explored, and the operation easily performed.

2d. For the introduction of a new suture apparatus, which lies embedded in the tissues for an indefinite period without danger of cutting its way out, as do silk ligatures.

And 3d. For the invention of a self-retaining catheter, which can be worn with the greatest comfort by the patient during the whole process of treatment.

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In order to obtain a correct view of the vaginal canal, I place the patient upon a table about $2\frac{1}{2}$ by 4 feet, on her knees, with the nates elevated, and the head and shoulders depressed. The knees must be separated some 6 or 8 inches, the thighs at about right angles with the table, and the clothing all thoroughly loosened, so that there shall be no compression of the abdominal parietes. An assistant on each side lays a hand in the fold between the glutei muscles and the thigh, the ends of the fingers extending quite to the labia majora; then, by simultaneously pulling the nates upwards and outwards, the os externum opens, the pelvic and abdominal viscera all gravitate towards the epigastric region, the atmosphere enters the vagina, and there, pressing with a weight of 14 lbs. upon the square inch, soon stretches this canal out to its utmost limits, affording an easy view of the os tincae, fistula, &c. To facilitate the exhibition of the parts,

* Sims, J. Marion. On the Treatment of Vesico-Vaginal Fistula. *American Journal of Medical Science*, 1852, XXIII, p. 59.

the assistant on the right side of the patient introduces into the vagina the lever speculum represented in Fig. i, and then, by lifting the perineum, stretching the sphincter, and raising up the recto-vaginal septum, it is as easy to view the whole vaginal canal as it is to examine the fauces by turning a mouth widely open, up to a strong light. (See Fig. 4.) This method of exhibiting the parts is not only useful in these cases, but in all affections of the os and cervix uteri requiring ocular inspection. The most painful organic diseases, such as corroding ulcer, carcinoma, &c., may be thus exposed without inflicting the least pain, while any local treatment may be instituted without danger of injuring the healthy structures. By this method, also, a proper estimate anatomically, can be had of the shape and capacity of the vagina; for where there is no organic change, no contraction, and no rigidity of it from sloughs, ulcers, and cicatrices, and where the uterus is movable, this canal immediately swells out to an enormous extent, thus showing its great expansibility.

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Of the Suture Apparatus.—Sutures all serve the same general purpose, viz. the bringing and holding together parts that we wish to unite. They are variously named, according to circumstances—as the Interrupted, because it is solitary; the Continued, because a plurality of them are joined together; the Quilled, because of the peculiar method of securing it; and the Twisted, for a similar reason.

The one that I use for closing vesico-vaginal fistulae, I have termed the clamp suture, from its peculiar method of action. Thus, if the profession allow me to introduce a new suture by its most appropriate name, we shall then have in general use, sutures named, first, according to their relation, the interrupted and continued. Second, according to the method of securing them, the quilled and twisted; and third, according to its method of action, the clamp suture.

As all sutures are but modifications, one of another, so is the clamp a modification of the quilled.

The clamp suture is composed of small annealed silver wire fastened to cross-bars, after the manner of the quilled suture. The wire is drawn down to about the size of a horse-hair, and then annealed. The cross-bars, or clamps, are very small, not more than a line in diameter, and made of silver or lead, as most convenient. If of silver, they may be tubular; when of lead, solid. They must be highly polished, and without the slightest asperity, particularly at their extremities. They act as clamps in this way. The parts embraced between them, being held in close apposition, swell upward, and overlap them; while they, by pressure, produce an ulceration in the vaginal surface, sufficient to allow of their being perfectly embedded, and after a while even sometimes hidden from view. This ulcerative process is attended, of course, with a purulent discharge, which continuing for three or four days, diminishes, and soon ceases altogether; but not till the bed made by the clamp becomes lined with mucous membrane. After this the apparatus would lie innocuously in the tissue for an indefinite period. I have allowed it to remain long enough for the extremities of the clamps to be covered over completely by firm granulations, which, opposing considerable resistance to their removal, had to be lacerated before this could be accomplished.

This suture is far preferable to anything before suggested for the purpose. Its introduction dates from June 1849, since which time I have had comparatively little trouble in the treatment of the great majority of cases of vesico-vaginal fistula. Properly applied, this suture never ulcerates out, having always to be removed by means of scissors, hooks, and forceps. It may be allowed to remain intact for six, eight, or ten days, or even longer. If removed too soon, the delicate cicatrix may gradually yield to the traction of the ascending uterus, or to the force exerted by the bladder in expelling its contents, and thus reproduce a small fistulous orifice to be closed by a subsequent and more cautious operation. I have seen the new cicatrix give way from another cause, and perhaps it is the chief one. The clamps, burrowing in the vaginal surface, leave a deep sulcus or fissure on each side of the new cicatrix, which,

when they are removed too soon, fill up by granulation. It is a law of all granulating wounds to contract as they heal, and this contraction on each side of the new cicatrix is often sufficient to pull it gradually apart. But if the clamps are allowed to remain till their sulci are covered with mucous membrane, then there is no danger of this accident, for these chasms then gradually disappear, less by filling up with granulations, than by an absorption of their elevated edges.



Robert Lawson Tait · 1845-1899

LAWSON TAIT is remembered particularly for his contribution to our knowledge of extrauterine pregnancy and its treatment, and for introducing the operations for removal of diseased ovaries and tubes. He was born in Edinburgh, May 1, 1845. He received his early education at Heriot's Hospital, later becoming a student at the University of Edinburgh. In 1846 he was admitted a Licentiate in the Royal College of Physicians and Royal College of Surgeons at Edinburgh and for a time at this period he was assistant to Sir Henry Littlejohn and Sir James Y. Simpson. He was profoundly influenced by the example of the surgeon Syme whose extreme cleanliness in his work was a striking contrast to the methods of his contemporaries. In Septem-



Lawson Tait

ROBERT LAWSON TAIT (1845-1899)

ber, 1870, Tait settled in Birmingham and in the same year was admitted as a member of the Royal College of Surgeons in England. The next year he was made a fellow and appointed surgeon to the newly founded Hospital for Diseases of Women. In 1873 Tait received the Hastings Gold Medal for his essay on *Diseases of the Ovaries*. In 1872 he performed two operations of historic significance, in one instance removing an ovary for suppurative disease, and in the other extirpating the uterine appendages to arrest the growth of a bleeding myoma. In 1873 he performed his first hysterectomy for myoma of the uterus and three years later removed a hemato-salpinx. Previous to 1883 no one had attempted to operate on a case of ectopic pregnancy in which rupture of the tube had recently taken place. In this year, a case presenting itself, Tait decided to operate soon after the tube had ruptured and this operation was the beginning of a series of 35 cases which soon followed with but two deaths. Within a short time the operation became the recognized method of treatment of a desperate condition.

Tait was the first to make the general statement that all ectopic gestations were primarily tubal but also stated that there was no a priori reason why ovarian pregnancy should not occur. In 1878 Tait began to express doubts as to the value of Listerian precautions and thus became leader in the school of "aseptic" as opposed to "antiseptic surgery." He imagined that this departure from the usual methods then in vogue had nothing to do with Listerism but his attitude had much to do with the evolution of our present aseptic plan of surgical technic which is after all the perfect evolution of Listerism. Tait's operative treatment of the diseases of the tubes blazed a pioneer trail which became a broad road by which operative treatment of every diseased organ in the abdomen soon became established. His advocacy of exploratory laparotomy and his intraperitoneal treatment of the pedicle of ovarian cysts are also landmarks by which he is to be remembered. Tait received many honors at home and abroad and made a notable trip to America where he demonstrated his methods. In 1887 he was appointed Professor of Gynecology at Queen's College. He was one of the founders of the British Gynecological Society.

THE TREATMENT OF ECTOPIC PREGNANCY*

We have now to deal with the varieties of ectopic gestation and I propose at once to dismiss all previous classifications as inconsistent with the facts as they have occurred in my own experience and incompatible alike with the view of the explanation of the cause of ectopic gestation which I have offered and with the physiology of impregnation. The uterus being regarded as the only site possible for normal pregnancy and the tract through which the ovum passes and in which it may be impregnated in the abnormal process, it follows as a matter of course that all ectopic gestations must, in their origin, be tubal. A possible exception to this may be the impregnation of an ovum in its vesicle before it leaves the ovary—a matter I shall discuss immediately.

A clinical distinction of two kinds of tubal pregnancy must be made, though pathologically they must be regarded as quite similar. This division occurs between the cases in which the fertilised ovum becomes attached to the inner wall of the tube where it is free from uterine tissue, and those cases where the ovum cavity is formed by the distension of the tubes at that part imbedded in the structure of the uterine wall. These cases have been called "interstitial" and I propose to retain this term.

The process of development of an ovum in the tube at any part of it, inevitably results in rupture of the tube. In the "interstitial" cases, the rupture, so far as is known, always takes place into the peritoneal cavity, and I cannot imagine any other way in which it might go, though we have assertions that a diagnosis has been made of tubal pregnancy which has ended by the ovum being discharged through the uterus. Such cases are easily dismissed from serious discussion, for I have never seen a preparation of interstitial pregnancy which could, by any possibility, have been diagnosed from normal pregnancy before the period of rupture. It is easier to believe, therefore, that such cases as I speak of have been errors of diagnosis than that the uterine tissue has been

* Tait, Lawson. *Lectures on Ectopic Pregnancy*. Birmingham, 1888, pp. 5, 23, 25.

ruptured and the pregnancy has become intra-uterine. And here let me state that about this subject, as indeed about nearly everything else in this book, I do not give as a fact anything which has not been verified, either by post-mortem or ante-mortem examination. Any man who gives an opinion that he diagnosed a tubal pregnancy, or any other lesion, and that its course was this, that, or the other, merely upon the unaided discrimination of symptoms or the dim light of a pelvic examination, I regard with so much suspicion that I do not accept his evidence for argument save under exceptional circumstances. Post-mortem records, museum specimens, and the facts observed at operations yield evidence which is usually incontrovertible, and such as these only do I care to use. The interstitial ectopic gestation ruptures uniformly as I have said, and so far as we know, into the peritoneal cavity. The period of its rupture seems to be variable from three to twenty weeks, a fact which I derive from post-mortem record and museum specimens solely, for I have had no operative experience of this disaster and have had only one case within my own associations.

Ectopic gestation in the free portion of the tube infallibly involves rupture at some part of its progress before the fourteenth week, in fact I think I might say the twelfth week, for out of an enormous number of specimens I have examined I have entirely failed to satisfy myself that rupture had been delayed later than the twelfth week, and I have seen it as early as the fourth week of gestation. This rupture I propose to term "primary rupture," and it constitutes in one direction, the most disastrous accident known amongst women.



The great impediment to the adoption of this treatment is the uncertainty of diagnosis.

Mark the importance of the last sentence, which I have italicised, for this sentence it is, reiterated by almost every writer on abdominal surgery up to 1878, and continued as a tendency by a great many still, which has stood in the way of our success. I have long since thrown it to the winds, and when I find my patient "in danger of death from conditions

within the abdomen which do not seem to be clearly of a malignant nature, but a correct diagnosis of which is impossible, I open the abdomen and at once make the diagnosis certain and a successful treatment possible."

This is the rule I laid down in 1878, adding to it, for other purposes, that I did the same thing when "the conditions were such that the patient's life was miserable by reason of suffering which could not be relieved, or at least had not been—by all other measures." The result has been an enormous advance in abdominal surgery, obtained only after a severe struggle with the authority of the elders, who asserted that the abdomen was a region into which the writs of ordinary surgical laws should not run.

This principle of exploration is nothing new, in fact the way it is sometimes used or rather abused is almost horrible. I once saw a surgeon, who is now a baronet and has a Court appointment, remove a breast with a tumour in it. After he had the whole thing away in his hands, he drew his knife across the tumour and out spurted a lot of pus, "laudable pus." He had made his exploration after the treatment was complete. If he had explored first his diagnosis would have been completed, his blunder saved and the radical and exaggerated treatment rendered wholly unnecessary. I have similarly seen a limb amputated for a sequestrum opening into the knee joint, which a preliminary exploration would have shown to be capable of removal without amputation and the limb would have been saved. Crowds of illustrations of this kind of theory could be given; showing in the first place, that complete accuracy of diagnosis is no more possible in the breast than it is in the abdomen, that exploration is a sound principle when there is doubt, and that many ghastly blunders would be saved if the practice were extended into general surgery. Absolute accuracy of diagnosis in the abdomen is very far from being possible; only the ignorant assert that it is, and only fools wait for it.



The diagnosis of tubal pregnancy before rupture of the tube is not easy, as I have said, because the patients do not claim our attention. What symptoms there are, as in the solitary case where I had a chance of making a diagnosis, are merely those of tubal occlusion and distension—matters very easy to diagnose and to treat. If I ever should make a diagnosis of tubal pregnancy before rupture I should advise its immediate removal by abdominal section as being more certain and far more safe than the fancy methods of puncturing the cyst and injecting poisonous fluids or passing through it some kind of galvanic current. There can be, there clearly is from the statements of those who have tried these plans, neither certainty nor safety about them; and they will commend themselves only to such as, by lack of courage and skill to obtain good results, have only bad records to show in abdominal section.

The diagnosis of tubal pregnancy at the time of rupture may be made with certainty seven times out of eight, and may be guessed at in the eighth instance. They are too serious to be lightly regarded at any time, and are practically coincident with those of pelvic haematocele. If the rupture takes place into the broad ligament they are the symptoms of extra-peritoneal haematocele. If the rupture takes place into the peritoneal cavity they are the characteristic and most serious group which belong to intra-peritoneal haematocele.

No more appropriate place than this occurs to me to discuss this much confused question, if for no other reason than that I have never seen an intra-peritoneal haematocele that was not due to a ruptured tubal pregnancy; and very many cases of extra-peritoneal haematocele (effusions of blood into the broad ligament) have undoubtedly been tubal pregnancies which have ruptured between the peritoneal folds of that important structure. The difference between them is all important in every way, for the intra-peritoneal ruptures seem to be almost uniformly fatal, whilst the extra-peritoneal haematoceles, whether arising from tubal pregnancies or not, should certainly be left to take their own course unless they give signs that they are suppurating.

Emil Oscar Jacob Bruno Noeggerath · 1827-1895

IN 1872 Noeggerath published his observations on Gonorrhœa which changed the views of the medical world regarding the clinical significance of the disease especially in its effect on women. He maintained that the disease was not only intractable to treat but might remain latent for long periods before causing severe complications. Noeggerath also pointed out the association of sterility in gonorrhœal infection in women and suspected the etiological factor of the disease, which, however, remained to be discovered by Niesser in 1879. Emil Noeggerath was born at Bonn, Germany, October 5, 1827. He received his medical degree from the University of Bonn in 1852 and for several years was assistant to Kilian in the Bonn gynecological clinic. He came to New York in 1857 and became there a pioneer gynecologist. Among other appointments was included the Professorship of Obstetrics and Diseases of Women at the New York Medical College. Noeggerath was one of the founders of the American Gynecological Society and in 1876 at its first meeting read his important paper on *Latent Gonorrhœa, Especially with Regard to Its Influence on Fertility in Women*. His views brought forth much opposition and lively discussion which the author closed by saying "After the gentlemen have given five years or more of careful study to this question, I shall expect to hear more approval than I have done



Emil Noeggerath

EMIL OSCAR JACOB BRUNO NOEGGERATH
(1827-1895)

today." In 1868 Noeggerath, with Abraham Jacobi, founded the *American Journal of Obstetrics* and for five years served as editor. In 1886 he removed to Wiesbaden, Germany, and in 1892 published there an important treatise on Carcinoma.

LATENT GONORRHEA, ESPECIALLY WITH REGARD TO ITS INFLUENCE ON FERTILITY IN WOMEN*

In the year 1872 I published in the German language a monograph on Latent Gonorrhea, which was not received very favorably by the medical press. The suggestions laid down were so new, and so contrary to the theories prevalent at that time, that the book was looked upon with distrust.

I now find, however, the subject of latent gonorrhea gradually making its way into most of the gynecological handbooks and treatises of recent date, both here and abroad. This has encouraged me to bring the subject, at least the most important part of it, that concerning its connection with fecundity, before this meeting; the more so, since my experience has been enlarged, and my views have become clearer and better defined, in more than one direction.

The attempt to demonstrate the existence of what I call latent gonorrhea, is surrounded by difficulties hard to overcome, to such a degree, that I waited ten years after its discovery before I dared to put the matter into shape for publication. For, with all the advance in the physical sciences, I have been unable to bring forth a direct proof of its existence. In my work, published four years ago, I expressed the hope, that the key to solve the question might be found in the presence of a fungus peculiar to the secretion of women affected with latent gonorrhea, of which my researches up to that time had given much encouragement. I have, however, not followed them up, for several reasons, principally owing to the fact, that I found the same fungus in discharges from very young children, in cases where I was unable to trace all the points in the etiology of the case, that would be necessary

* *Transactions of American Gynecological Society*, 1876.

to establish the value attributable to the presence of this growth.

Another difficulty, which is connected with the history of latent gonorrhea, consists in the fact, that the symptoms of the disease vary in almost every instance; and although it is possible to give a description of typical cases as I occasionally encounter them, they are met with rarely, one or another, or even the majority of signs not being present, or the disease so hidden by other uterine affections, more apparent to the senses, that its recognition is often a matter of difficulty and doubt. Furthermore, certain peri-uterine alterations, the result of latent gonorrhea, are so apt to escape detection by the most experienced of us, that a majority of the cases fail to receive as yet their true appreciation.

★

I have chosen the term latent gonorrhea instead of chronic gonorrhea, first, for the reason alleged above, that the patient is being gradually infected without any apparent symptoms of disease developing themselves in the beginning. I have chosen this name better to define the truly imperceptible manner by which the disease works its slow progress in the organs affected up to the first more or less severe attack, when it passes from the latent into the active state; and secondly, because the disease in the female, although she be discharged, cured to all appearances, after an attack, say of gonorrhœal ovaritis, keeps within her, at least up to the time of menopause, the germ of similar more or less severe relapses. The gonorrhea, after an acute attack, has simply returned to its state of latency to rest there, for months or years, the patient meanwhile being always in danger of a renewed outbreak, on proper provocation.

Admitting the persistence of gleet in the male after its outward disappearance, the question remains, how does it affect the female?

The course of the disease is only in comparatively few instances so well defined as in the case related above. We can,

however, point out four different and clinically distinct groups of manifestations of the gradual infection of the woman by the repeated contact with minute quantities of the poison. It appears,—

- 1st, as Acute Perimetritis.
- 2nd, as Recurrent Perimetritis.
- 3d, as Chronic Perimetritis.
- 4th, as Ovaritis.

All of these affections are accompanied with a catarrh of several sections of the mucous membrane. Often this catarrh is the only symptom present. Among one hundred and five cases, of which I have written notes, I found—

- 10 patients suffering from acute and subacute perimetritis.
- 8 patients suffering from recurrent perimetritis.
- 38 patients suffering from chronic perimetritis.
- 17 patients suffering from chronic ovaritis.
- 32 patients suffering from catarrh of the uterus, apparently uncomplicated.

In looking over this statement, it will strike you at once that there is one characteristic feature apparent, namely, the prevalence of peri-uterine affections.

I have noted, among all of these, only five cases of so-called chronic metritis. The occurrence of acute, subacute, recurrent and chronic perimetritis to such a large extent, is observed in another class of female patients, namely, those who lead the lives of prostitutes.

We find the position of the uterus entirely in accordance with this view. It is now generally admitted, that forward and lateral dislocations of the uterus involving the whole of its axis, when acquired during life, have their origin in contractions of one or more of the ligaments from inflammatory or other irritation.



This condition of things explains:—

1. Why so many healthy, blooming, young girls, begin to suffer and fail as soon as they enter the bonds of marriage.

2. Why so many apparently healthy young women remain sterile.

3. Why the patient labor of our best physicians is so often thwarted in the attempt to cure certain affections of the female genital organs. It explains to some extent the prevalence of uterine diseases in large cities, and their increase during the last twenty-five years.

The time is too short for me to speak of the treatment applicable to these affections, the result of latent gonorrhea. I will make only one remark. I have found that an obstinate catarrh of the womb, which would not be influenced by remedies, yields pretty rapidly when the husband of the patient is also taken care of, especially where the signs of stricture and muco-purulent discharge have been very evident.

To conclude, I will sum up the result of these considerations in the following manner:—

1. Gonorrhea in the male, as well as in the female, persists for life in certain sections of the organs of generation, notwithstanding its apparent cure in a great many instances.

2. There is a form of gonorrhea which may be called latent gonorrhea, in the male, as well as in the female.

3. Latent gonorrhea in the male, as well as in the female, may infect a healthy person either with acute gonorrhea or gleet.

4. Latent gonorrhea in the female, either the consequence of an acute gonorrhreal invasion or not, if it pass from the latent into the apparent condition, manifests itself as acute chronic, recurrent perimetritis, or ovaritis, or as catarrh of certain sections of the genital organs.

5. Latent gonorrhea, in becoming apparent in the male does so by attacks of gleet or epididymitis.

6. About ninety per cent of sterile women are married to husbands who have suffered from gonorrhea either previous to, or during married life.



Thomas Addis Emmet • 1828-1919

THOMAS ADDIS EMMET was born in Charlottesville, Virginia, May 29, 1828. His father, who was Professor of Natural History at the University of Virginia, came of a long line of eminent men who



THOMAS ADDIS EMMET (1828-1919)

were conspicuous in Irish history. Emmet graduated from the Jefferson Medical College in 1848 and soon after received the appointment of resident physician to the Emigrant Refuge Hospital on Ward's Island, New York City. He served here for three years after which he began general practice. In 1855 he met J. Marion Sims, who selected him to become his associate in the Woman's Hospital. From 1855 to 1872 Emmet carried the whole surgical responsibility of the institution and this was the period also of his most important and productive work.

In 1868 he published his report of 600 cases of vesico-vaginal fistula. At this

time also he devised the operation of trachelorrhaphy which is known by his name. In the field of plastic work upon the perineum, Emmet described the butterfly-denudation operation which predominated for many years in this country. Emmet, probably more than any other individual, did more to place gynecological plastic surgery on a scientific basis. Towards the end of his long life Emmet wrote *Personal Reminiscences of My Life*, a work telling not only of his fascinating and inspiring career but a splendid historical survey of his time.

LACERATION OF THE CERVIX UTERI AS A FREQUENT AND UNRECOGNIZED CAUSE OF DISEASE*

It is now nearly twelve years since I first recognized the importance of this injury from parturition, as a cause of subsequent disease, and the difficulty of relieving certain effects until the cause had been fully appreciated.

In my clinics at the Woman's Hospital I have for years past demonstrated, by an operation, its practical bearing, and have frequently called the attention of the profession to the necessity for surgical interference under certain conditions; yet the operation is still but little practised or its importance appreciated.

Previous to my own observations, I believe that no one had placed on record his recognition of the lesion as a cause of uterine disease, or had advocated the necessity for repairing the injury after its reception.

Lacerations of the cervix are of frequent occurrence, and are seldom recognized, even at the time of labor. The tissues are then so soft that, without the rent has passed beyond the cervix into the vaginal and connective tissues, it can scarcely be detected by a mere digital examination, and will escape observation unless an unusual amount of hemorrhage should exist as a consequence.



In practice, we have to deal chiefly with the consequences of lateral laceration, and the effects are more marked when the lesion is complete than when confined to either side. Partial lateral laceration of the cervix will sometimes partly fill up by granulations, especially if the injury was confined to one side, but never so perfectly that the line cannot be easily recognized. Whenever the rent has extended to the vaginal junction, or beyond, there will exist a tendency for the tissues to roll out, from within the uterine canal, so soon as the

* Emmet, T. A. *American Journal of Obstetrics*. New York, 1874, 1875, vii, p. 442.

female assumes the upright position. The posterior lip of the cervix naturally catches on the posterior vaginal wall, as the uterus after a recent delivery is still larger than natural and low in the pelvis from its increased weight. So soon as the flaps formed by the laceration are once separated, their direction of divergency becomes increased by the anterior lip being crowded forward in the axis of the vagina, towards its outlet, in the direction presenting the least resistance, while the same force naturally crowds the posterior lip backward into the cul-de-sac. From thus forcing the flaps apart, a source of irritation is at once established, which arrests the involution of the organ, and the angle of laceration soon becomes the seat or starting-point of an erosion which gradually extends over the everted surfaces.

★

My mode of operating is to place the patient on the left side, and to use Sims' speculum, or some other perineal retractor to bring the parts in view. The operation can be performed sometimes on the back, as the vaginal outlet is large and the uterus so low that it can be readily drawn outside and returned after the operation. But the left side has the advantage, were there no other, that while in this position there can be less rolling out of the tissues except when the patient is placed on the knees and elbows. The first step is to bring the flaps together in apposition, and while they are lifted up by means of a double tenaculum in the hands of an assistant, the instrument known as the uterine tourniquet is slipped over the cervix below the point of vaginal junction and tightened. The object of this instrument is to control the hemorrhage, during the operation, which is sometimes excessive without its use. Until recently I have used a portion of twisted wire, such as is usually furnished for the ecraseur, the two ends of which were passed through a canula. The loop was slipped over the neck of the uterus while being held up by an assistant, and tightened by sliding the canula down the wires held in the other hand. As soon as the cervix was

compressed as much as possible by this means, the ends of the wire were bent back and several times wrapped around the end of the canula so that they could not slip. Within a few years I have had the instrument constructed, which I have referred to, by using, instead of the wire, a portion of watch-spring passed through a canula, with the application of the double ratchet of the ecraseur to lighten the loop about the cervix. Just before constricting the neck, I take the precaution to draw up, with a tenaculum, through the loop sufficient vaginal tissue all around the cervix that the flaps may be brought together easily, while the fold thus formed renders the instrument less likely to slip over the cervix when it has become reduced in size from the escape of blood during the operation. Then, after separating the flaps, the surfaces which have been lacerated are to be freely denuded from one lip to the other, leaving a broad undenuded tract in the centre, from before backward, which is to form the continuation of the uterine canal to the os. The greater the hypertrophy of the organ the more necessity there will be for leaving the canal and outlet large, or both will be too small when the uterus regains its normal size. A difficulty is sometimes experienced in bringing together accurately the vaginal edges of the flaps, in consequence of the great thickening in the central portion, which will be found dense and filled with cysts. It is necessary to remove this tissue freely, and from the opposite side to which it is to be united, so that the two freshened surfaces will correspond in width. Either the scissors or the scalpel may be used to freshen the surfaces, but I prefer the former, from the greater rapidity with which the tissues can be removed. While the tourniquet is being held by an assistant, to steady the uterus, the portion from the flap to be removed is secured by means of a tenaculum in the hand of the operator. At the outer angles of the fissure, just at the vaginal junction, it is necessary when freshening the surface to remove very superficially the tissues at these points. The circular artery is seldom ruptured when the laceration takes place, from its elasticity and position in loose connec-

tive tissue, but as the parts contract after cicatrization, it is frequently left just at the termination of the angle of the fissure with the vaginal tissues. The most difficult step in the operation is the introduction of the sutures, from the great density of the diseased uterine tissue and the mobility of the organ. The first suture should be passed through the anterior flap, close along the bottom of the fissure, and withdrawn just at the edge of the undenuded strip left to form the canal, again to enter at a similar point in the opposite lip, so as to make its exit on the vaginal surface of the posterior flap corresponding with the first point of entrance. From three to four sutures are generally needed on each side. The last one, through the crown of the cervix being more superficial, is easier of introduction, but needs be passed with more care than the others, with the view of accurately approximating the edges at the os and along the vaginal surface from this point. Before securing the sutures already passed, those for the opposite side must also be introduced, or great difficulty will be experienced. Should there, however, be an unusual amount of bleeding, it can be arrested by only twisting the interrupted suture nearest to the bottom of the angle. But it is even better, before doing so, to see if it cannot be controlled by tightening the tourniquet, which may have become loosened in consequence of the shrinkage of the neck from the escape of blood confined within the tissues when the instrument was first applied. The same plan is followed for securing the sutures, as recommended by Dr. Sims for the operation of vesico-vaginal fistula. The needle is armed with a short silk loop, and after its introduction the silver wire is then attached and drawn through to take its place. The ends of the wires are seized by a pair of forceps and twisted over the "shield," but before being freed from the former they should be bent over flat by means of a tenaculum, used as a fulcrum, under the suture at the end of the twist close to the line of union. If bent over properly, so as to lie close to the vaginal surface, and cut off at half an inch in length, the sutures may remain undisturbed for an indefinite time, but they are

generally removed on the eighth day. When the sutures are withdrawn the precaution must be taken to cut the nearest portion of the loop so that it will continue to bind the parts in apposition until it has been drawn out. It is best to remove first the suture nearest to the vaginal junction, for if there should be any tendency to gap in the line, the others can be left for several days longer, so that the ununited portion may heal by granulation.

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The historical and biographical material in this work has been largely drawn from the following bibliography. Other sources of course have been used. For certain biographical details I am indebted in particular to Kelly and Burrage, *American Medical Biographies; Dictionary of National Biography; Album of Fellows*, American Gynecological Society; *Lexikon der hervorragenden Ärzte* (1884), and *Dictionnaire des Sciences Médicales* (1820). The list is here appended not only in sincere acknowledgment for its immeasurable usefulness in the preparation of this work but also in the hope that the student who wishes to read further in these subjects will find useful references.

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